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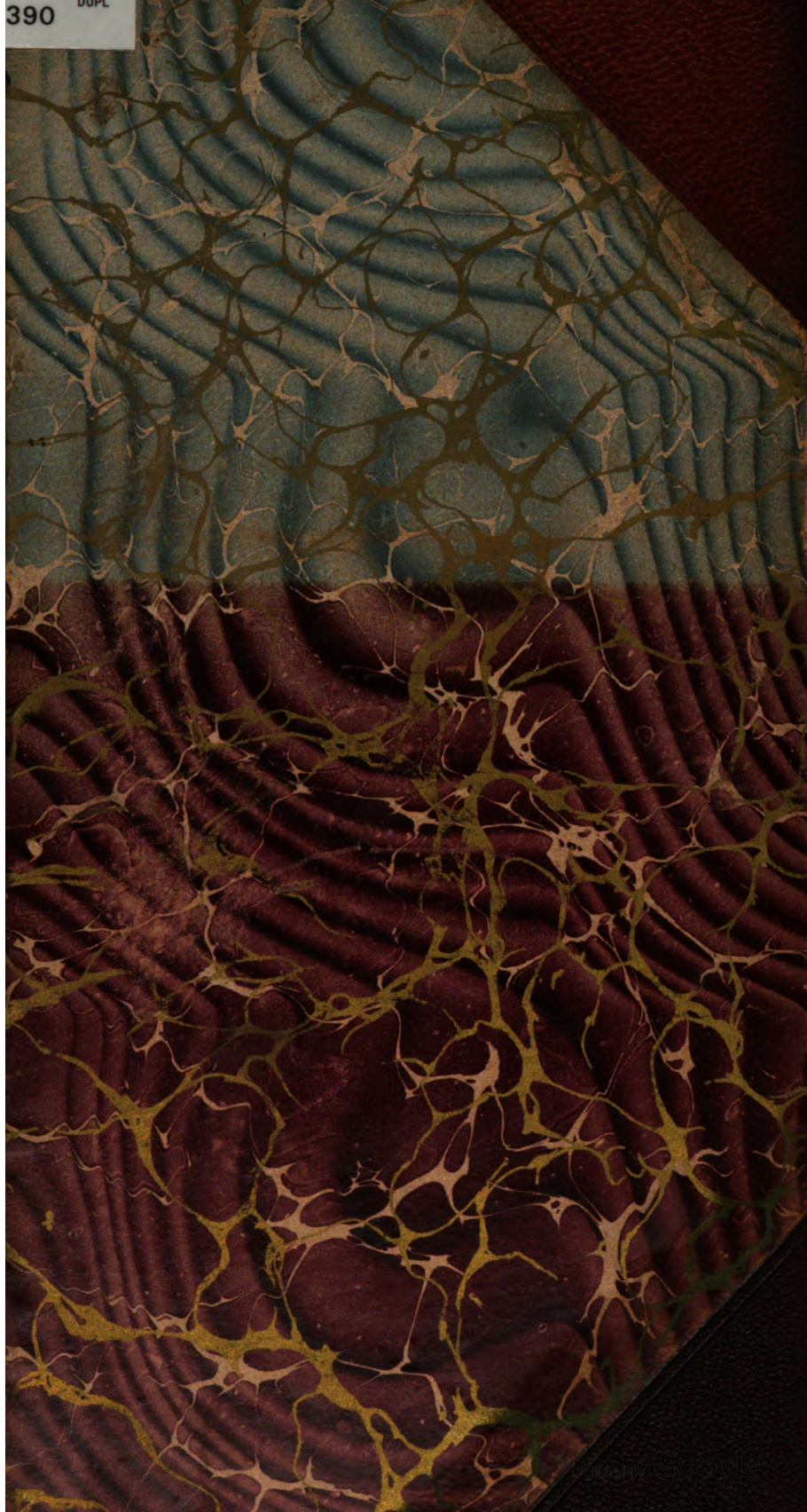
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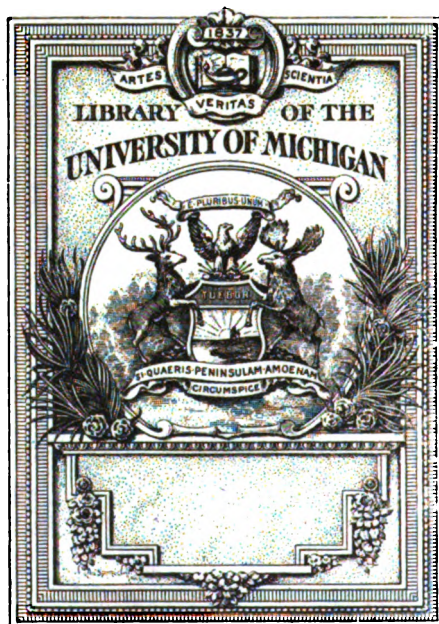
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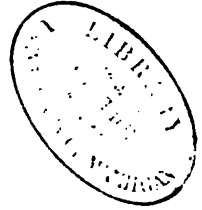
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Jan 50 1858
THE

NAUTICAL ALMANAC

AND

ASTRONOMICAL EPHEMERIS

FOR THE YEAR

1859,

TO WHICH IS ADDED

A SUPPLEMENT,

CONTAINING EPHEMERIDES

OF

CERES, PALLAS, JUNO, AND VESTA,

AND

APPROXIMATE ONES OF THE NEWLY DISCOVERED PLANETS,
FOR THE YEAR 1856.

PUBLISHED BY ORDER OF

THE LORDS COMMISSIONERS OF THE ADMIRALTY.

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1855.

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ALPHABETICALLY ARRANGED.

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the small, the Page of the Preface ; and the Arabic, the Page of the Book.*

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P R E F A C E.

THE contents of the NAUTICAL ALMANAC and ASTRONOMICAL EPHEMERIS for the year 1859 are the same generally as those of the preceding year ; the Supplement contains Ephemerides of Ceres, Pallas, Juno, and Vesta, and all the newly discovered Planets for the year 1856, with the exception of Circe, Leucothea, and the two just announced, one by Dr. Luther, and the other by Mr. Goldschmidt ; also the Elements of Ceres, Pallas, Juno, Vesta, Astræa, Parthenope, Thetis, Lutetia, Amphitrite, and Pomona, perturbed to near the times of their respective oppositions.

The Sun's Longitude from the Mean Equinox, the Latitude, and the Earth's Radius Vector have been deduced from CARLINI's Tables appended to *Effemeridi Astronomiche di Milano per l'Anno 1833*, (Milano, 1832,) using a difference of Meridians of $36^m 45^s$.

The Longitude and Radius Vector have been computed accurately from the Tables for the Mean Noon of every 6th day of the year, and interpolated with fourth differences for each day.

The Latitude of the Sun, depending on the attraction of the Moon, was computed for every day, and that part depending upon the Planets, Venus and Jupiter, was obtained for each sixth day and interpolated.

The Nutations of the Obliquity of the Ecliptic ($\Delta \epsilon$) and of Longitude (ΔL), have been computed according to the following formulæ :

$$\Delta \epsilon = 9'' \cdot 2236 \cos \varpi - 0'' \cdot 0895 \cos 2 \varpi + 0'' \cdot 5507 \cos 2 \odot$$

$$\Delta L = -17'' \cdot 2524 \sin \varpi + 0'' \cdot 2063 \sin 2 \varpi - 1'' \cdot 2691 \sin 2 \odot$$

where ϖ is the Mean Longitude of the Moon's ascending Node, and \odot the true Longitude of the Sun. The coefficients are those of Professor PETERS.*

The Mean Obliquity of the Ecliptic has been taken $= 23^\circ 27' 27'' \cdot 84$, on January 1, 1859, and the Mean Annual diminution $= 0'' \cdot 457$. (BESSEL's *Tab. Reg.* page 9.)

The Sun's Right Ascension and Declination were computed independently for the Mean Noon of every sixth day, and interpolated for each day with fourth differences ; the correction of the Declination for Latitude was then applied to each day separately.

* The terms depending on 2ϖ have been omitted.

The Semidiameter of the Sun at the Earth's Mean Distance = $16' 1'' \cdot 82$, being the result of the 12 years' Observations, 1836 to 1847, made at the Royal Observatory, at Greenwich.

The Equatorial Horizontal Parallax of the Sun, at the Earth's Mean Distance has been taken = $8'' \cdot 5776$, as deduced by Professor ENCKE, from the Transits of Venus in 1761 and 1769. (*Der Venusdurchgang von 1769, &c.* Gotha, 1824. page 108.)

The Constant of Aberration = $20'' \cdot 4451$. (*Struve, Sur le coefficient Constant de l'Aberration, p. 47.*)

The Sidereal Time at Mean Noon = $\frac{\text{Sun's Mean Longitude} + \text{Nutation.}}{15}$

According to BESSEL (*Tab. Reg.* page XXIV), the Mean Longitude of the Sun, at Paris Mean Noon of January 0^d of the year 1800 + t , is

$$279^{\circ} 54' 1'' \cdot 36 + t \cdot 27'' \cdot 605844 + t^2 \cdot 0'' \cdot 0001221805 - f \cdot 14' 47'' \cdot 083,$$

where f denotes, for the 19th century, the number of years from the year immediately preceding 1800 + t , which is divisible by 4 without a remainder. Assuming the meridian of Greenwich to be $9^{\text{m}} 20 \cdot 63$ West of that of Paris, and altering the epoch to the Mean Noon of January 1 of the year 1800 + t , the Sun's Mean Longitude (M) for the meridian of Greenwich is hence found equal to

$$280^{\circ} 53' 32'' \cdot 71 + t \cdot 27'' \cdot 605844 + t^2 \cdot 0'' \cdot 0001221805 - f \cdot 14' 47'' \cdot 083,$$

and we have, for the Mean Noon of any day (n) of the year 1800 + t ,

$$\text{Sidereal Time} = \frac{M}{15} + n \cdot 3^{\text{m}} 56 \cdot 555348 + \text{Nutation in R.A.}$$

The Sun's Geocentric Co-ordinates have been computed from the following formulæ :

$$X = R \cos \odot$$

$$Y = R \sin \odot \cos \omega$$

$$Z = R \sin \odot \sin \omega = Y \tan \omega$$

in which R represents the Radius Vector of the Earth, \odot the Sun's *true* Longitude from the *true* Equinox, and ω the apparent obliquity of the Ecliptic. The Reductions to the Mean Equinox of January 1 have been obtained from similar formulæ ; only using the Sun's Longitude from the Mean Equinox and the mean obliquity of the Ecliptic of January 1, 1859.

The Longitude of the Moon from the *Mean Equinox*, and the Latitude, have been derived from BURCKHARDT'S "*Tables de la Lune*" (Paris, 1812), using a difference of Meridians = $9^{\text{m}} 21^{\text{s}}$: The arguments of the 32 minor equations of Longitude have been taken from the Tables for each *tenth* Noon, and interpolated for every Noon by the continued addition of one-tenth of the difference, retaining throughout an additional figure ; and the arguments of the other equations have been taken from the Tables for each *fifth* Noon, and in a similar manner interpolated for every Noon and Midnight : with the arguments so formed, the 32 minor equations have been computed for every Mean Noon, their sums interpolated for every Midnight

with fourth differences, and the remaining portion of the computation of the Longitude and Latitude performed independently for every Mean Noon and Midnight of the Year; second differences having been taken into account wherever the irregular variation of the Equations rendered such a correction appreciable. The Longitude has then been reduced to the True Equinox, and the results differenced to the fourth order, and carefully examined. Wherever the progression of the fourth differences indicated a probable error of more than $0''.5$ the computations have been re-examined.

The Horizontal Parallax of the Moon has been obtained from Mr. ADAMS's Tables in the Appendix to the NAUTICAL ALMANAC for 1856, and the Semi-diameter by assuming 0.273114 as its ratio to the Horizontal Parallax, that being the value which Mr. ADAMS considers will nearly satisfy observation.

The Right Ascensions and Declinations have been computed for each noon and midnight, examined by means of differences to the fourth order, and interpolated for every hour. From these have been deduced the Right Ascensions and Declinations at Transit on each day of the year.

The Lunar Distances from the Sun have been computed from Longitudes and Latitudes for every six hours, examined by means of differences to the second order, and interpolated for every three hours. Those from the Planets and Stars have been computed from Right Ascensions and Declinations for every six hours, examined by means of differences to the second, third, and sometimes fourth order, according to the irregularity of their variation, and interpolated for every three hours.

The Places of Mercury, Venus, and Mars, from the Mean Equinox, have been derived from LINDENAU's Tables,* assuming Greenwich to be $42^m 56^s$ West of Seeberg; and those of Jupiter, Saturn, and Uranus, from BOUVARD's new Tables,† with a difference of meridians of $9^m 21''.5$; substituting only for Table XLII of Saturn, MR. ADAMS's correct Table given in the NAUTICAL ALMANAC for 1851, page xiv.

For Mercury, the Perturbations were obtained immediately from the Tables for each alternate Mean Noon, and interpolated with first differences; the remainder of the calculations was performed independently for every Mean Noon.

* Investigatio nova Orbitæ a Mercurio circa Solem descriptæ, accedunt Tabulæ Planetæ ex Elementis recens repertis et Theoria Gravitatis Illust. De Laplace constructæ. Auctore BERNHARDO DE LINDENAU. Gothæ, 1813. 4to.

Tabulæ Veneris novæ et correctæ ex Theoria Gravitatis clarissimi De Laplace et ex Observationibus recentissimis in specula Astronomica Seebergensi habitis erutæ. Auctore BERNHARDO DE LINDENAU. Gothæ, 1810. 4to.

Tabulæ Martis novæ et correctæ ex Theoria Gravitatis clarissimi De Laplace et ex Observationibus recentissimis erutæ. Auctore BERNHARDO DE LINDENAU. Eisenberg, 1811. 4to.

† Tables Astronomiques publiées par le Bureau des Longitudes de France, contenant les Tables de Jupiter, de Saturne et d'Uranus, construites d'après la Théorie de la Mécanique Céleste: par M. A. BOUVARD. Paris, 1821. 4to.

For Venus, the Heliocentric Longitude from the *True Equinox*, Latitude and Radius Vector, were computed independently for Mean Noon of every eighth day, then interpolated with fourth differences for each day. The Geocentric places were computed for every fourth day, and the intermediate values obtained by interpolating with fourth differences.

For Mars, the Heliocentric Longitude from the *True Equinox*, Latitude and Radius Vector, were obtained independently for Mean Noon of every twelfth day, and interpolated with fourth differences for each day. The Geocentric places were computed for every sixth day, and interpolated with fourth differences.

For Jupiter, Saturn, and Uranus, the Heliocentric Longitude from the *True Equinox*, Latitude and Radius Vector, were computed for Mean Noon at intervals of thirty days, and interpolated, for each day, with second differences. The Geocentric places were obtained independently for every sixth day, and interpolated for every day, using differences to the fourth order.

The Ephemeris of each of the Planets, Mercury, Venus, Mars, Jupiter, Saturn, and Uranus, at the Time of Transit, has been computed for each day of the Year from their Places at Mean Noon.

The Semidiameters of the Planets, at the Mean Distance of the Earth from the Sun, have been adopted as follow :

Mercury,	Eq. Sem.	3 ⁿ ·23	(Lindenau's <i>Tables of Mercury</i> , page 38).
Venus,	Eq. Sem.	8·25	(Delambre's <i>Astronomy</i> , vol. ii. page 620).
Mars,	Eq. Sem.	4·435	(Littrow's <i>Astronomy</i> , vol. ii. page 389).
Jupiter,	Eq. Sem.	99·704	(<i>Mem. Ast. Soc.</i> , vol. iii. page 301).
Saturn,	Eq. Sem.	81·106	(<i>Ast. Nach.</i> No. 189).
Uranus,	Eq. Sem.	37·25	(Delambre's <i>Astronomy</i> , vol. ii. page 620).

The Eclipses of Jupiter's Satellites have been computed from "*Tables Ecliptiques des Satellites de Jupiter, d'après la théorie de leurs attractions mutuelles et les constantes déduites des Observations.* Par le Baron DAMOISEAU. Publiées par le Bureau des Longitudes. Paris 1836," using 9^m 21^s·5 for the difference of meridians.

For the first Satellite, Equations 4 and 5 have been taken from the Tables for every Eclipse, and the other Equations for each sixth Eclipse. For the second Satellite, Equation 4 has been taken for every Eclipse, and the others for each fourth Eclipse. For the third Satellite, Equation 5 has been taken for every Eclipse, and the others for each second Eclipse. For the fourth Satellite, the whole of the Equations have been taken from the Tables for each Eclipse. In each case the computation has been finished by interpolating, with second differences, the sums of those equations not taken from the Tables for each Eclipse.

For the Configurations and Occultations of the Satellites, as well as the Transits of the Satellites and their Shadows over the disc of the Planet, Mr. WOOLHOUSE'S Tables in the APPENDIX to the NAUTICAL ALMANAC for 1835 have been used, with the exception of Table II. of each Satellite, which has been reconstructed to adapt it to DAMOISEAU'S New Tables.

The Elements at page 510, for determining the appearance of Saturn's Ring, have been calculated by means of the formulæ* at page viii of the NAUTICAL ALMANAC for 1836, adopting the late Professor BESSEL'S determinations of the values of Ω , i and a' viz. :—

$$\begin{aligned}\Omega &= 166^{\circ} 53' 8'' \cdot 9 + 46'' \cdot 462 (t-1800) \\ i &= 28 \ 10 \ 44 \cdot 7 - 0 \cdot 350 (t-1800) \\ a' &= 39'' \cdot 308\end{aligned} \left. \begin{array}{l} \\ \\ \end{array} \right\} \text{Ast. Nach., No. 274, col. 167.}$$

(Ast. Nach., No. 275, col. 170),

the mean distance of the Planet from the Sun being taken = $9 \cdot 54301$, agreeably to BOUVARD'S Tables of Saturn, instead of $9 \cdot 5421889$, the value used by BESSEL in the reduction of his observations.

The Mean Places for January $od \cdot 385$, 1859, of 84 of the 100 Fixed Stars formerly given, have been derived from a manuscript by MR. ADAMS, and the remaining 16 from the fundamental Catalogue for 1840, contained in the NAUTICAL ALMANAC for 1848, pages 436 to 441, by means of the formulæ at page xiv of the PREFACE to the *Second Edition* of the NAUTICAL ALMANAC for 1834. Of the 47 stars inserted for the first time in the NAUTICAL ALMANAC for 1857, the mean places of 43 have been derived from the Greenwich Observations of 1850 as printed, and the observations of 1851 and 1852 as supplied in manuscript by the Astronomer Royal. The positions of ν Orionis, λ Sagittarii, ρ Capricorni, and γ Virginis have been taken from the Greenwich Twelve-year Catalogue†—the place for 1840 alone having been adopted for the latter star. The proper motions as determined by the REV. R. MAIN, in his paper on the subject, (*Mem. Roy. Ast. Soc. Vol. xix.*) or computed by similar formulæ, have been included in the reductions of the mean places of the 47 additional stars to the year 1859.

The Logarithms of A, B, C, D, at page XX. of each Month, have been computed agreeably to the formulæ at page 363, omitting only in the values of C and D the terms — $0 \cdot 00405 \sin 2 \zeta$ (and — $0'' \cdot 0885 \cos 2 \zeta$; and for the only Stars that can be sensibly affected by the omission, viz., the five Polar Stars, a Table of Corrections is given at pages 422 and 423.

The Table of Constants at pages 364 and 365 for facilitating the Reduction of Stars generally, has been computed from BESSEL'S formulæ, given at page 363, using the A, B, C, D, contained in this volume.

* See Errata in the NAUTICAL ALMANAC for 1840, page xv.

† Catalogue of 2156 Stars, formed from the Observations made during twelve years, from 1836 to 1847, at the Royal Observatory, Greenwich. London. 1849. 4to.

The apparent places of 142 of the Fixed Stars have been deduced from the mean places for January $\text{O}^{\text{d}}\cdot 385$, 1859, using the Variables A, B, C, D, in the present Volume with Constants computed for the year 1860, similar to those for 1850 in the Catalogue of the British Association.* For the five Polar Stars the constants have been computed for 1859 and 1860, and interpolated. The corrections were computed independently for every tenth day, with the exception of those for α and δ URSÆ MINORIS, which were interpolated, with second differences, from computations made for every third day of the year.

A further correction of the right ascension for *daily* aberration is necessary, where extreme accuracy is required, and may be computed as follows: Let ϕ denote the latitude of the place, and δ the declination of the Star, then the correction (*in time*) for the *upper* transit is,

$$+ \text{O}^{\text{s}}\cdot 0206 \cos \phi \sec \delta$$

and for the *lower* transit,

$$- \text{O}^{\text{s}}\cdot 0206 \cos \phi \sec \delta$$

The Lists of Moon-Culminating Stars, and Stars liable to Occultation by the Moon, have been selected from the Catalogue of the British Association.

The mean Places of the Stars for each List were taken in order of preference,
1. From the Catalogue of the 147 Stars in this Work. 2. From AIRY'S Greenwich Twelve-Year Catalogue of 2156 Stars. 3. From the Catalogue of the British Association. The reduction of the Mean to the Apparent Places has been performed by means of the Constants in the Catalogue of the British Association; the corrections for each star on the contiguous days being obtained by different computers for the Moon-Culminating List, and those for the Occultations by duplicate computations.

The calculations of the Solar and Lunar Eclipses, the Elements of Occultations, and the Occultations visible at Greenwich, have been made according to the methods and formulæ given by Mr. WOOLHOUSE in the APPENDIX to the NAUTICAL ALMANAC for 1836: those relating to the Occultations, in duplicate.

The Tides at London Bridge for the year 1859 have been computed from tables in "An Elementary Treatise on the Tides. By J. W. LUBBOCK, Esq." (London, 1839.)

* The Catalogue of Stars of the British Association for the Advancement of Science; containing the Mean Right Ascensions and North Polar Distances of eight thousand three hundred and seventy-seven Fixed Stars, reduced to January 1, 1850: together with their annual precessions, secular variations, and proper motions, as well as the logarithmic constants for computing precession, aberration, and nutation. With a Preface explanatory of their Construction and Application. By the late Francis Baily, Esq. London, 1845. 4to.

The Tables for finding the Latitude of a place by Observations of the Pole Star (*α URSA MINORIS*), at any hour of the day, are founded on the following formula:

$$l = a - p \cos h + \frac{1}{2} \sin 1'' (p \sin h)^2 \tan a$$

where l denotes the latitude

a — the true altitude of the Star

p — the apparent polar distance, expressed in seconds of arc

h — the hour angle of the Star $= S - a$; S being the sidereal time of observation, and a the right ascension of the Star.

Table I contains the value of the *second* term ($p \cos h$) or the *first correction*; assuming, as *mean* values, $p = 86' 0''$, and $a = 17^\circ 0'$.

Table II contains the value of the *third* term ($\frac{1}{2} \sin 1'' (p \sin h)^2 \tan a$) or the *second correction*, using the same *mean* quantities as in Table I.

Table III, which is *special* for the year 1859, and depends upon the difference between the true and assumed values of p and a , contains the *third* correction increased by $1'$ for the purpose of rendering the quantities additive.

A fourth term ($-\frac{1}{2} \sin^2 1'' (p \cos h) (p \sin h)^2$) is omitted, its greatest value being less than half a second.

In the construction of this Ephemeris generally, duplicate computations have been made where necessary, and isolated calculations performed to guard against systematic error; all results admitting of such test have been finally examined by means of differences, and every precaution taken to secure accuracy in the printing.

J. R. HIND,
Superintendent of the Nautical Almanac.

Nautical Almanac Office,
3, Vereham Buildings, Gray's Inn, London.
October 16, 1855.

PRINCIPAL ARTICLES OF THE CALENDAR, For the Year 1859.

Golden Number - - - -	17	Dominical Letter - - - -	B
Epact - - - - -	26	Roman Indiction - - - -	2
Solar Cycle - - - - -	20	Julian Period - - - - -	6572

FIXED AND MOVEABLE FESTIVALS, ANNIVERSARIES, &c. &c.

Epiphany - - - - -	Jan. 6	<i>Rogation Sunday</i> - - - -	May 29
Martyrdom of K. Charles I. - - -	30	<i>Ascension Day—Holy Thursday</i>	June 2
<i>Septuagesima Sunday</i> - - -	Feb. 20	<i>Pentecost—Whit Sunday</i> - - -	12
St. David - - - - -	Mar. 1	<i>Trinity Sunday</i> - - - - -	19
<i>Quinquagesima—Shrove Sunday</i> -	6	Accession of Q. Victoria - - -	20
<i>Ash Wednesday</i> - - - - -	9	Proclamation - - - - -	21
<i>Quadragesima—1st Sun. in Lent</i> -	13	<i>Corpus Christi</i> - - - - -	23
St. Patrick - - - - -	17	St. John Bapt.—Midsum. Day - -	24
Annunciation—Lady Day - - -	25	Birth of Prince Albert - - Aug.	26
<i>Palm Sunday</i> - - - - -	April 17	St. Michael—Michaelmas Day	Sept. 29
<i>Good Friday</i> - - - - -	22	Gunpowder Plot - - - - -	Nov. 5
St. George - - - - -	23	Birth of Prince of Wales - - -	9
EASTER SUNDAY - - - - -	24	<i>1st Sunday in Advent</i> - - - -	27
<i>Low Sunday</i> - - - - -	May 1	St. Andrew - - - - -	30
Birth of Q. Victoria - - - - -	24	St. Thomas - - - - -	Dec. 21
Restoration of K. Charles II. - -	29	Christmas Day - - - - -	25

The Year 5620 of the Jewish Era commences on September 29, 1859.

Ramadan (Month of Abstinence observed by the Turks) commences on
April 4, 1859.

The Year 1276 of the Mohammedan Era commences on August 1, 1859.

EXPLANATION OF ASTRONOMICAL SYMBOLS AND ABBREVIATIONS.

☉ The Sun.	♄ Massilia.	N. North. S. South.
☾ The Moon.	♅ Lutetia.	E. East. W. West.
☿ Mercury.	♆ Calliope.	° Degrees.
♀ Venus.	♇ Thalia.	' Minutes of Arc.
☾ or ♂ The Earth.	♈ Themis.	" Seconds of Arc.
♂ Mars.	♉ Phoebe.	h Hours.
♁ Ceres.	♊ Proserpine.	m Minutes of Time.
♁ Pallas.	♋ Euterpe.	s Seconds of Time.
♁ Juno.	♌ Bellona.	
♁ Vesta.	♍ Amphitrite.	
♁ Astræa.	♎ Urania.	♈ Aries - - 0
♁ Hebe.	♏ Euphrosyne.	I ♄ Taurus - - 30
♁ Iris.	♐ Pomona.	II ♊ Gemini - - 60
♁ Flora.	♑ Polyhymnia.	III ♋ Cancer - - 90
♁ Metis.	♒ Circe.	IV ♌ Leo - - - 120
♁ Hygeia.	♓ Leucothea.	V ♍ Virgo - - 150
♁ Parthenope.	♈ Jupiter.	VI ♎ Libra - - 180
♁ Victoria.	♉ Saturn.	VII ♏ Scorpio - 210
♁ Egeria.	♊ Uranus.	VIII ♐ Sagittarius 240
♁ Irene.	♑ Neptune.	IX ♑ Capricornus 270
♁ Ennomia.	♈ Conjunction.	X ♒ Aquarius - 300
♁ Psyche.	☐ Quadrature.	XI ♏ Pisces - - 330
♁ Thetis.	♊ Opposition.	
♁ Melpomene.	♋ Ascending Node.	
♁ Fortuna.	♌ Descending Node.	

LAW TERMS, 1859.

As settled by Statutes

11 GEO. IV. and 1 WILL. IV. cap. 70, s. 6. (Passed July 23, 1830.)

1 WILL. IV. - - - - - cap. 3, s. 2. (Passed Dec. 23, 1830.)

HILARY TERM - - - - *Begins* Jan. 11 - - *Ends* Jan. 31

EASTER - - - - - Apr. 15 - - - - May 12

TRINITY - - - - - May 26 - - - - June 16

MICHAELMAS - - - - - Nov. 2 - - - - Nov. 25

For Returns see Statute 1 WILL. IV. cap. 3, s. 2. (Passed Dec. 23, 1830.)

UNIVERSITY TERMS, 1859.

Terms.	OXFORD.		CAMBRIDGE.		
	<i>Begins.</i>	<i>Ends.</i>	<i>Begins.</i>	<i>Divides.</i>	<i>Ends.</i>
Lent - - - -	Jan. 14	April 16	Jan. 13	Feb. 28, Noon.	April 15
Easter - - -	May 4	June 10	May 4	June 5, Midnight.	July 8
Trinity - - -	June 15	July 9	- - -	- - - - -	- - -
Michaelmas -	Oct. 10	Dec. 17	Oct. 10	Nov. 12, Midnight.	Dec. 16
	<i>The Act, July 5.</i>		<i>The Commencement, July 5.</i>		

ERRATA.

(Continued from page xiv of the *Nautical Almanac* for 1858.)

NAUTICAL ALMANAC FOR THE YEAR 1857.

Page ix, Twentieth line from the top,
for γ Orionis read ν Orionis.

NAUTICAL ALMANAC FOR THE YEAR 1858.

Page ix, Twentieth line from the top,
for γ Orionis read ν Orionis.

Page 16, Lunar Distance from Mars, January 12, at VI^h.
for 22 39 50 read 52 39 50

Page 216, Lunar Distance from Fomalhaut, November 19, at III^h.
for 86 35 21 read 68 35 21

———— Lunar Distance from α Pegasi, November 19, at III^h.
for 64 39 42 read 46 39 42

Page 312, Meridian Passage of Jupiter, June 14,
for 22 36.3 read 22 38.3

Page 470, Fifteenth line from the bottom, and Page 471, fifth line from
the top,
for Northern limb read Southern limb.

Page 488, February 27,
for Leonis read ϵ Leonis.

In some
copies.

NAUTICAL ALMANAC FOR THE YEAR 1859.

Page 37, ^{P.L.} of First line,
^{diff.}
for 218 read 2180

Page 194, October 5,
for Arietis read Arietia.

E P H E M E R I S
FOR THE YEAR
1859,
FOR THE MERIDIAN
OF THE
ROYAL OBSERVATORY AT GREENWICH.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		h m s	s	° ' "	"	m s	m s	s
Sat.	1	18 46 10.34	11.042	S. 23 2 7.4	12.77	1 11.08	3 43.84	1.182
Sun.	2	18 50 35.36	11.028	22 57 1.0	13.91	1 11.03	4 12.22	1.168
Mon.	3	18 55 0.04	11.012	22 51 27.2	15.05	1 10.98	4 40.26	1.152
Tues.	4	18 59 24.33	10.995	22 45 26.0	16.18	1 10.93	5 7.92	1.135
Wed.	5	19 3 48.21	10.977	22 38 57.6	17.30	1 10.87	5 35.17	1.117
Thurs.	6	19 8 11.64	10.957	22 32 2.4	18.42	1 10.81	6 1.97	1.097
Frid.	7	19 12 34.60	10.935	22 24 40.4	19.52	1 10.75	6 28.30	1.076
Sat.	8	19 16 57.04	10.912	22 16 51.9	20.61	1 10.68	6 54.11	1.053
Sun.	9	19 21 18.94	10.889	22 8 37.2	21.69	1 10.61	7 19.39	1.029
Mon.	10	19 25 40.29	10.865	21 59 56.5	22.76	1 10.53	7 44.10	1.005
Tues.	11	19 30 1.04	10.839	21 50 50.2	23.82	1 10.45	8 8.22	0.980
Wed.	12	19 34 21.18	10.812	21 41 18.3	24.88	1 10.37	8 31.74	0.953
Thurs.	13	19 38 40.68	10.785	21 31 21.3	25.91	1 10.29	8 54.62	0.926
Frid.	14	19 42 59.52	10.757	21 20 59.5	26.93	1 10.20	9 16.84	0.898
Sat.	15	19 47 17.68	10.728	21 10 13.2	27.94	1 10.11	9 38.38	0.870
Sun.	16	19 51 35.15	10.699	20 59 2.6	28.94	1 10.01	9 59.24	0.840
Mon.	17	19 55 51.92	10.669	20 47 28.0	29.93	1 9.92	10 19.41	0.810
Tues.	18	20 0 7.97	10.639	20 35 29.8	30.90	1 9.82	10 38.85	0.780
Wed.	19	20 4 23.30	10.608	20 23 8.3	31.85	1 9.72	10 57.56	0.749
Thurs.	20	20 8 37.88	10.576	20 10 23.7	32.80	1 9.62	11 15.54	0.718
Frid.	21	20 12 51.71	10.545	19 57 16.5	33.73	1 9.51	11 32.77	0.687
Sat.	22	20 17 4.79	10.513	19 43 47.0	34.65	1 9.40	11 49.24	0.655
Sun.	23	20 21 17.11	10.480	19 29 55.5	35.55	1 9.30	12 4.96	0.623
Mon.	24	20 25 28.65	10.448	19 15 42.3	36.43	1 9.19	12 19.90	0.590
Tues.	25	20 29 39.41	10.415	19 1 7.9	37.30	1 9.08	12 34.06	0.558
Wed.	26	20 33 49.39	10.383	18 46 12.4	38.16	1 8.97	12 47.45	0.525
Thurs.	27	20 37 58.58	10.350	18 30 56.5	39.00	1 8.85	13 0.05	0.492
Frid.	28	20 42 6.97	10.316	18 15 20.3	39.83	1 8.74	13 11.86	0.458
Sat.	29	20 46 14.56	10.283	17 59 24.4	40.64	1 8.62	13 22.86	0.425
Sun.	30	20 50 21.34	10.249	17 43 9.1	41.43	1 8.51	13 33.05	0.391
Mon.	31	20 54 27.31	10.215	17 26 34.8	42.20	1 8.39	13 42.43	0.357
Tues.	32	20 58 32.46		S. 17 9 41.9		1 8.28	13 51.00	

* Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
Sat.	1	^h 18 ^m 46 ^s 9.66	[°] 23 ['] 2 ["] 8.2	16 18.2	^m 3 43.77	^h 18 42 25.89
Sun.	2	18 50 34.59	22 57 2.0	16 18.2	4 12.14	18 46 22.45
Mon.	3	18 54 59.18	22 51 28.3	16 18.2	4 40.17	18 50 19.01
Tues.	4	18 59 23.39	22 45 27.3	16 18.2	5 7.82	18 54 15.57
Wed.	5	19 1 47.19	22 38 59.2	16 18.1	5 35.07	18 58 12.12
Thur.	6	19 8 10.54	22 32 4.2	16 18.1	6 1.86	19 2 8.68
Frid.	7	19 12 33.44	22 24 42.5	16 18.1	6 28.18	19 6 5.24
Sat.	8	19 16 55.79	22 16 54.3	16 18.1	6 53.99	19 10 1.80
Sun.	9	19 21 17.62	22 8 39.8	16 18.0	7 19.26	19 13 58.36
Mon.	10	19 25 38.89	21 59 59.5	16 18.0	7 43.97	19 17 54.92
Tues.	11	19 29 59.57	21 50 53.4	16 18.0	8 8.09	19 21 51.48
Wed.	12	19 34 19.64	21 41 21.8	16 17.9	8 31.61	19 25 48.03
Thur.	13	19 38 39.08	21 31 25.2	16 17.8	8 54.49	19 29 44.59
Frid.	14	19 42 57.85	21 21 3.7	16 17.8	9 16.70	19 33 41.15
Sat.	15	19 47 15.95	21 10 17.7	16 17.7	9 38.24	19 37 37.71
Sun.	16	19 51 33.37	20 59 7.4	16 17.7	9 59.10	19 41 34.27
Mon.	17	19 55 50.09	20 47 33.1	16 17.6	10 19.27	19 45 30.82
Tues.	18	20 0 6.09	20 35 35.3	16 17.5	10 38.71	19 49 27.38
Wed.	19	20 4 21.36	20 23 14.1	16 17.4	10 57.42	19 53 23.94
Thur.	20	20 8 35.90	20 10 29.9	16 17.3	11 15.40	19 57 20.50
Frid.	21	20 12 49.69	19 57 23.0	16 17.2	11 32.64	20 1 17.05
Sat.	22	20 17 2.72	19 43 53.9	16 17.1	11 49.11	20 5 13.61
Sun.	23	20 21 15.00	19 30 2.7	16 17.0	12 4.83	20 9 10.17
Mon.	24	20 25 26.50	19 15 49.8	16 16.9	12 19.78	20 13 6.72
Tues.	25	20 29 57.23	19 1 15.7	16 16.8	12 33.95	20 17 3.28
Wed.	26	20 33 47.18	18 46 20.6	16 16.7	12 47.34	20 20 59.84
Thur.	27	20 37 56.34	18 31 4.9	16 16.6	12 59.94	20 24 56.40
Frid.	28	20 42 4.71	18 15 29.1	16 16.4	13 11.76	20 28 52.95
Sat.	29	20 46 12.27	17 59 33.4	16 16.2	13 22.76	20 32 49.51
Sun.	30	20 50 19.03	17 43 18.4	16 16.1	13 32.96	20 36 46.07
Mon.	31	20 54 24.98	17 26 44.4	16 15.9	13 42.35	20 40 42.63
Tues.	32	20 58 30.11	17 9 51.8	16 15.8	13 50.93	20 44 39.18

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	280 36 32.2	S. 0.43	9.9926726	14 50.1	14 48.1	54 19.0	54 11.6
2	281 37 43.2	0.41	9.9926751	14 46.4	14 45.2	54 5.6	54 1.0
3	282 38 54.3	0.35	9.9926794	14 44.3	14 43.7	53 57.8	53 55.8
4	283 40 5.4	0.27	9.9926854	14 43.5	14 43.7	53 55.0	53 55.6
5	284 41 16.3	0.16	9.9926932	14 44.2	14 45.1	53 57.5	54 0.8
6	285 42 26.9	S. 0.04	9.9927026	14 46.4	14 48.0	54 5.4	54 11.5
7	286 43 37.2	N. 0.09	9.9927137	14 50.1	14 52.6	54 19.1	54 28.3
8	287 44 47.2	0.23	9.9927266	14 55.6	14 59.1	54 39.3	54 52.1
9	288 45 56.7	0.37	9.9927413	15 3.1	15 7.6	55 6.7	55 23.2
10	289 47 5.6	0.49	9.9927580	15 12.6	15 18.2	55 41.6	56 2.0
11	290 48 13.9	0.59	9.9927769	15 24.3	15 30.8	56 24.1	56 48.0
12	291 49 21.5	0.68	9.9927979	15 37.7	15 45.0	57 13.4	57 40.1
13	292 50 28.4	0.74	9.9928212	15 52.5	16 0.2	58 7.7	58 35.8
14	293 51 34.6	0.77	9.9928470	16 7.9	16 15.4	59 3.8	59 31.2
15	294 52 40.0	0.77	9.9928754	16 22.5	16 29.0	59 57.2	60 21.2
16	295 53 44.7	0.74	9.9929064	16 34.8	16 39.7	60 42.5	61 0.2
17	296 54 48.7	0.68	9.9929401	16 43.4	16 45.9	61 13.9	61 22.9
18	297 55 52.0	0.59	9.9929764	16 47.0	16 46.7	61 27.1	61 26.0
19	298 56 54.6	0.49	9.9930154	16 45.0	16 41.9	61 19.7	61 8.5
20	299 57 56.6	0.37	9.9930574	16 37.6	16 32.2	60 52.7	60 32.8
21	300 58 57.9	0.24	9.9931020	16 25.8	16 18.7	60 9.6	59 43.6
22	301 59 58.6	N. 0.11	9.9931492	16 11.1	16 3.2	59 15.7	58 46.6
23	303 0 58.7	S. 0.01	9.9931990	15 55.1	15 47.1	58 17.0	57 47.7
24	304 1 58.2	0.12	9.9932511	15 39.2	15 31.7	57 18.9	56 51.4
25	305 2 57.1	0.22	9.9933055	15 24.6	15 18.0	56 25.3	56 1.1
26	306 3 55.5	0.29	9.9933621	15 11.9	15 6.4	55 38.9	55 18.9
27	307 4 53.2	0.33	9.9934207	15 1.6	14 57.4	55 1.2	54 45.7
28	308 5 50.2	0.34	9.9934812	14 53.8	14 50.8	54 32.5	54 21.6
29	309 6 46.5	0.33	9.9935434	14 48.4	14 46.5	54 12.8	54 6.0
30	310 7 42.0	0.28	9.9936072	14 45.2	14 44.4	54 1.2	53 58.2
31	311 8 36.6	0.20	9.9936725	14 44.1	14 44.2	53 57.0	53 57.3
32	312 9 30.3	S. 0.11	9.9937391	14 44.6	14 45.5	53 59.1	54 2.3

MEAN TIME.

THE MOON'S

Day of the Week.	Day of the Month.	Longitude.		Latitude.		Age.	Meridian Passage.
		Noon.	Midnight.	Noon.	Midnight.	Noon.	
Sat.	1	250 55 44.9	256 55 22.5	S. 5 1 12.1	S. 4 53 50.5	27.1	22 38.7
Sun.	2	262 53 41.4	268 50 53.8	4 43 16.8	4 29 38.6	28.1	23 30.2
Mon.	3	274 47 11.2	280 42 44.7	4 13 6.1	3 53 49.8	29.1	♄
Tues.	4	286 37 45.1	292 32 24.5	3 32 2.0	3 7 56.3	0.3	0 20.5
Wed.	5	298 26 55.4	304 21 32.1	2 41 47.3	2 13 51.0	1.3	1 8.6
Thur.	6	310 16 30.3	316 12 8.0	1 44 23.1	1 13 41.5	2.3	1 54.2
Frid.	7	322 8 45.4	328 6 45.1	S. 0 42 4.0	S. 0 9 48.7	3.3	2 37.4
Sat.	8	334 6 32.2	340 8 34.0	N. 0 22 44.8	N. 0 55 17.3	4.3	3 18.9
Sun.	9	346 13 20.0	352 21 21.5	1 27 28.6	1 58 58.0	5.3	3 59.6
Mon.	10	358 33 11.2	4 49 22.7	2 29 24.0	2 58 24.7	6.3	4 40.7
Tues.	11	11 10 28.9	17 37 2.2	3 25 36.8	3 50 37.1	7.3	5 23.3
Wed.	12	24 9 32.8	30 48 27.5	4 13 0.7	4 32 23.1	8.3	6 9.0
Thur.	13	37 34 7.8	44 26 48.7	4 48 19.2	5 0 24.7	9.3	6 59.1
Frid.	14	51 26 37.1	58 33 30.1	5 8 16.8	5 11 34.3	10.3	7 54.9
Sat.	15	65 47 13.6	73 7 21.3	5 10 0.0	5 3 22.3	11.3	8 56.5
Sun.	16	80 33 14.0	88 4 0.7	4 51 35.1	4 34 39.9	12.3	10 2.5
Mon.	17	95 38 38.4	103 15 55.3	4 12 47.9	3 46 18.4	13.3	11 9.6
Tues.	18	110 54 32.9	118 33 10.3	3 15 39.6	2 41 28.4	14.3	12 14.2
Wed.	19	126 10 26.2	133 45 3.7	2 4 27.9	1 25 25.1	15.3	13 14.1
Thur.	20	141 15 52.8	148 41 53.1	N. 0 45 10.1	N. 0 4 32.3	16.3	14 8.7
Frid.	21	156 2 15.5	163 16 22.3	S. 0 35 41.4	S. 1 14 47.6	17.3	14 59.0
Sat.	22	170 23 48.2	177 24 19.5	1 52 8.7	2 27 12.2	18.3	15 46.5
Sun.	23	184 17 52.2	191 4 32.2	2 59 31.5	3 28 46.6	19.3	16 32.5
Mon.	24	197 44 32.3	204 18 11.9	3 54 41.8	4 17 5.9	20.3	17 18.3
Tues.	25	210 45 55.0	217 8 9.1	4 35 52.5	4 50 57.3	21.3	18 5.0
Wed.	26	223 25 23.8	229 38 10.4	5 2 19.3	5 9 59.4	22.3	18 53.3
Thur.	27	235 47 0.4	241 52 25.4	5 14 0.6	5 14 26.4	23.3	19 43.2
Frid.	28	247 54 56.1	253 55 1.8	5 11 21.8	5 4 53.5	24.3	20 34.4
Sat.	29	259 53 10.8	265 49 49.3	4 55. 8.5	4 42 14.7	25.3	21 25.9
Sun.	30	271 45 22.1	277 40 11.9	4 26 20.9	4 7 37.8	26.3	22 16.5
Mon.	31	283 34 39.2	289 29 3.0	3 46 16.4	3 22 29.2	27.3	23 5.4
Tues.	32	295 23 41.0	301 18 49.0	S. 2 56 29.5	S. 2 28 32.7	28.3	23 51.9

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 1.				MONDAY 3.			
0	16 34 14.38	S. 27 4 13.2	38.32	0	18 21 33.01	S. 27 35 19.2	26.68
1	16 36 27.69	27 8 3.1	36.99	1	18 23 46.09	27 32 39.1	28.00
2	16 38 41.10	27 11 45.1	35.66	2	18 25 59.05	27 29 51.0	29.32
3	16 40 54.62	27 15 19.1	34.32	3	18 28 11.88	27 26 55.1	30.63
4	16 43 8.23	27 18 45.0	32.98	4	18 30 24.58	27 23 51.3	31.94
5	16 45 21.94	27 22 3.0	31.64	5	18 32 37.14	27 20 39.7	33.24
6	16 47 35.73	27 25 12.9	30.30	6	18 34 49.55	27 17 20.2	34.54
7	16 49 49.62	27 28 14.7	28.95	7	18 37 1.82	27 13 53.0	35.83
8	16 52 3.58	27 31 8.4	27.60	8	18 39 13.94	27 10 18.0	37.12
9	16 54 17.62	27 33 54.1	26.25	9	18 41 25.91	27 6 35.2	38.40
10	16 56 31.73	27 36 31.7	24.90	10	18 43 37.72	27 2 44.8	39.68
11	16 58 45.91	27 39 1.1	23.54	11	18 45 49.36	26 58 46.7	40.95
12	17 1 0.15	27 41 22.4	22.19	12	18 48 0.84	26 54 40.9	42.22
13	17 3 14.45	27 43 35.6	20.83	13	18 50 12.15	26 50 27.5	43.48
14	17 5 28.80	27 45 40.6	19.47	14	18 52 23.29	26 46 6.6	44.74
15	17 7 43.20	27 47 37.4	18.10	15	18 54 34.25	26 41 38.1	45.99
16	17 9 57.65	27 49 26.0	16.74	16	18 56 45.03	26 37 2.2	47.24
17	17 12 12.13	27 51 6.5	15.37	17	18 58 55.63	26 32 18.7	48.47
18	17 14 26.65	27 52 38.8	14.01	18	19 1 6.03	26 27 27.8	49.71
19	17 16 41.19	27 54 2.8	12.64	19	19 3 16.25	26 22 29.6	50.93
20	17 18 55.76	27 55 18.7	11.27	20	19 5 26.27	26 17 23.9	52.16
21	17 21 10.35	27 56 26.3	9.90	21	19 7 36.10	26 12 11.0	53.37
22	17 23 24.96	27 57 25.8	8.53	22	19 9 45.73	26 6 50.7	54.58
23	17 25 39.57	S. 27 58 17.0	7.16	23	19 11 55.16	S. 26 1 23.2	55.78
SUNDAY 2.				TUESDAY 4.			
0	17 27 54.19	S. 27 59 0.0	5.79	0	19 14 4.38	S. 25 55 48.5	56.97
1	17 30 8.81	27 59 34.7	4.42	1	19 16 13.39	25 50 6.6	58.16
2	17 32 23.42	28 0 1.3	3.05	2	19 18 22.20	25 44 17.6	59.34
3	17 34 38.01	28 0 19.6	1.68	3	19 20 30.79	25 38 21.5	60.52
4	17 36 52.59	28 0 29.7	0.31	4	19 22 39.17	25 32 18.4	61.69
5	17 39 7.15	28 0 31.6	1.05	5	19 24 47.32	25 26 8.2	62.85
6	17 41 21.69	28 0 25.2	2.42	6	19 26 55.26	25 19 51.1	64.00
7	17 43 36.19	28 0 10.7	3.78	7	19 29 2.98	25 13 27.1	65.14
8	17 45 50.65	27 59 48.0	5.15	8	19 31 10.47	25 6 56.2	66.28
9	17 48 5.08	27 59 17.1	6.51	9	19 33 17.73	25 0 18.5	67.41
10	17 50 19.45	27 58 38.0	7.87	10	19 35 24.77	24 53 34.0	68.54
11	17 52 33.78	27 57 50.7	9.23	11	19 37 31.57	24 46 42.7	69.65
12	17 54 48.05	27 56 55.3	10.59	12	19 39 38.14	24 39 44.8	70.76
13	17 57 2.25	27 55 51.8	11.94	13	19 41 44.48	24 32 40.2	71.86
14	17 59 16.39	27 54 40.1	13.30	14	19 43 50.58	24 25 29.0	72.96
15	18 1 30.46	27 53 20.3	14.65	15	19 45 56.45	24 18 11.2	74.04
16	18 3 44.43	27 51 52.4	16.00	16	19 48 2.08	24 10 47.0	75.12
17	18 5 58.35	27 50 16.4	17.34	17	19 50 7.47	24 3 16.2	76.19
18	18 8 12.17	27 48 32.3	18.68	18	19 52 12.62	23 55 39.1	77.25
19	18 10 25.90	27 46 40.2	20.03	19	19 54 17.54	23 47 55.6	78.30
20	18 12 39.53	27 44 40.0	21.36	20	19 56 22.21	23 40 5.7	79.35
21	18 14 53.06	27 42 31.8	22.70	21	19 58 26.64	23 32 9.6	80.38
22	18 17 6.49	27 40 15.6	24.03	22	20 0 30.83	23 24 7.3	81.41
23	18 19 19.81	27 37 51.4	25.36	23	20 2 34.77	23 15 58.8	82.42
24	18 21 33.01	S. 27 35 10.2		24	20 4 28.47	S. 22 7 44.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 5.				FRIDAY 7.			
0	20 4 38.47	S. 23 7 44.1	83.45	0	21 38 59.56	S. 14 48 12.7	122.30
1	20 6 41.92	22 59 23.4	84.45	1	21 40 52.35	14 35 58.9	122.91
2	20 8 45.14	22 50 56.7	85.45	2	21 42 44.98	14 23 41.4	123.51
3	20 10 48.10	22 42 24.0	86.43	3	21 44 37.43	14 11 20.3	124.10
4	20 12 50.82	22 33 45.3	87.42	4	21 46 29.73	13 58 55.7	124.68
5	20 14 53.30	22 25 0.8	88.39	5	21 48 21.86	13 46 27.6	125.26
6	20 16 55.52	22 16 10.4	89.35	6	21 50 13.83	13 33 56.0	125.83
7	20 18 57.51	22 7 14.3	90.31	7	21 52 5.64	13 21 21.0	126.39
8	20 20 59.24	21 58 12.4	91.25	8	21 53 57.31	13 8 42.6	126.95
9	20 23 0.74	21 49 4.9	92.19	9	21 55 48.82	12 56 0.9	127.49
10	20 25 1.98	21 39 51.7	93.12	10	21 57 40.19	12 43 15.9	128.03
11	20 27 2.98	21 30 32.9	94.05	11	21 59 31.42	12 30 27.7	128.56
12	20 29 3.74	21 21 8.6	94.96	12	22 1 22.51	12 17 36.3	129.08
13	20 31 4.26	21 11 38.8	95.87	13	22 3 13.47	12 4 41.8	129.60
14	20 33 4.53	21 2 3.5	96.77	14	22 5 4.29	11 51 44.2	130.10
15	20 35 4.57	20 52 22.9	97.66	15	22 6 54.99	11 38 43.5	130.60
16	20 37 4.36	20 42 37.0	98.54	16	22 8 45.56	11 25 39.9	131.10
17	20 39 3.91	20 32 45.7	99.41	17	22 10 36.01	11 12 33.3	131.58
18	20 41 3.22	20 22 49.2	100.27	18	22 12 26.34	10 59 23.8	132.06
19	20 43 2.30	20 12 47.6	101.13	19	22 14 16.56	10 46 11.4	132.53
20	20 45 1.14	20 2 40.8	101.97	20	22 16 6.67	10 32 56.2	132.99
21	20 46 59.74	19 52 28.9	102.81	21	22 17 56.68	10 19 38.3	133.44
22	20 48 58.11	19 42 12.1	103.64	22	22 19 46.58	10 6 17.6	133.89
23	20 50 56.25	S. 19 31 50.2	104.46	23	22 21 36.38	S. 9 52 54.2	134.33
THURSDAY 6.				SATURDAY 8.			
0	20 52 54.15	S. 19 21 23.4	105.27	0	22 23 26.09	S. 9 39 28.2	134.76
1	20 54 51.83	19 10 51.8	106.07	1	22 25 15.71	9 25 59.6	135.18
2	20 56 49.28	19 0 15.3	106.87	2	22 27 5.24	9 12 28.5	135.60
3	20 58 46.50	18 49 34.0	107.66	3	22 28 54.68	8 58 54.8	136.01
4	21 0 43.49	18 38 48.1	108.44	4	22 30 44.05	8 45 18.7	136.41
5	21 2 40.27	18 27 57.4	109.21	5	22 32 33.34	8 31 40.2	136.81
6	21 4 36.83	18 17 2.1	109.97	6	22 34 22.56	8 17 59.3	137.20
7	21 6 33.16	18 6 2.3	110.72	7	22 36 11.72	8 4 16.1	137.58
8	21 8 29.28	17 54 57.9	111.47	8	22 38 0.81	7 50 30.6	137.95
9	21 10 25.18	17 43 49.1	112.21	9	22 39 49.84	7 36 42.9	138.32
10	21 12 20.88	17 32 35.8	112.94	10	22 41 38.82	7 22 53.0	138.67
11	21 14 16.36	17 21 18.2	113.66	11	22 43 27.75	7 9 0.9	139.03
12	21 16 11.63	17 9 56.2	114.37	12	22 45 16.63	6 55 6.7	139.37
13	21 18 6.70	16 58 29.9	115.08	13	22 47 5.47	6 41 10.5	139.71
14	21 20 1.56	16 46 59.5	115.77	14	22 48 54.28	6 27 12.2	140.03
15	21 21 56.23	16 35 24.8	116.46	15	22 50 43.05	6 13 11.9	140.36
16	21 23 50.69	16 23 46.0	117.14	16	22 52 31.79	5 59 9.8	140.67
17	21 25 44.96	16 12 3.1	117.81	17	22 54 20.51	5 45 5.7	140.98
18	21 27 39.03	16 0 16.2	118.48	18	22 56 9.20	5 30 59.8	141.28
19	21 29 32.92	15 48 25.3	119.13	19	22 57 57.89	5 16 52.1	141.57
20	21 31 26.61	15 36 30.5	119.78	20	22 59 46.56	5 2 42.7	141.85
21	21 33 20.12	15 24 31.8	120.42	21	23 1 35.22	4 48 31.5	142.13
22	21 35 13.45	15 12 29.2	121.06	22	23 3 23.88	4 34 18.7	142.40
23	21 37 6.59	15 0 22.8	121.68	23	23 5 12.54	4 20 4.3	142.66
24	21 38 59.56	S. 14 48 12.7		24	23 7 1.21	S. 4 5 48.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 9.				TUESDAY 11.			
0	h m s	° ' "	"	0	h m s	° ' "	"
1	23 7 1.21	S. 4 5 48.3	142.92	1	0 35 40.31	N. 7 34 35.3	145.73
2	23 8 49.89	3 51 30.8	143.16	2	0 37 35.36	7 49 9.7	145.57
3	23 10 38.59	3 37 11.8	143.40	3	0 39 30.68	8 3 43.2	145.40
4	23 12 27.31	3 22 51.3	143.64	4	0 41 26.26	8 18 15.6	145.22
5	23 14 16.05	3 8 29.5	143.86	5	0 43 22.11	8 32 46.9	145.02
6	23 16 4.83	2 54 6.3	144.08	6	0 45 18.25	8 47 17.1	144.82
7	23 17 53.64	2 39 41.8	144.29	7	0 47 14.67	9 1 46.0	144.60
8	23 19 42.48	2 25 16.0	144.49	8	0 49 11.38	9 16 13.7	144.38
9	23 21 31.37	2 10 49.0	144.69	9	0 51 8.39	9 30 39.9	144.14
10	23 23 20.31	1 56 20.9	144.87	10	0 53 5.69	9 45 4.8	143.89
11	23 25 9.31	1 41 51.6	145.05	11	0 55 3.31	9 59 28.1	143.63
12	23 26 58.36	1 27 21.3	145.22	12	0 57 1.24	10 13 49.9	143.35
13	23 28 47.47	1 12 49.9	145.39	13	0 58 59.49	10 28 10.1	143.07
14	23 30 36.65	0 58 17.6	145.54	14	1 0 58.06	10 42 28.5	142.77
15	23 32 25.91	0 43 44.3	145.69	15	1 2 56.96	10 56 45.2	142.47
16	23 34 15.24	0 29 10.1	145.83	16	1 4 56.20	11 11 0.1	142.15
17	23 36 4.65	S. 0 14 35.1	145.97	17	1 6 55.77	11 25 13.0	141.81
18	23 37 54.15	N. 0 0 8.8	146.09	18	1 8 55.70	11 39 23.9	141.47
19	23 39 43.75	0 14 37.3	146.21	19	1 10 55.98	11 53 32.7	141.11
20	23 41 33.44	0 29 14.6	146.32	20	1 12 56.61	12 7 39.4	140.74
21	23 43 23.24	0 43 52.6	146.42	21	1 14 57.61	12 21 43.9	140.36
22	23 45 13.14	0 58 31.1	146.51	22	1 16 58.97	12 35 46.1	139.96
23	23 47 3.16	1 13 10.2	146.60	23	1 19 0.71	12 49 45.9	139.56
23	23 48 53.29	N. 1 27 49.8	146.67	23	1 21 2.84	N. 13 3 43.3	139.13
MONDAY 10.				WEDNESDAY 12.			
0	23 50 43.55	N. 1 42 29.9	146.74	0	1 23 5.35	N. 13 17 38.1	138.70
1	23 52 33.94	1 57 10.4	146.80	1	1 25 8.25	13 31 30.3	138.25
2	23 54 24.46	2 11 51.3	146.86	2	1 27 11.54	13 45 19.8	137.79
3	23 56 15.11	2 26 32.4	146.90	3	1 29 15.23	13 59 6.6	137.31
4	23 58 5.92	2 41 13.9	146.94	4	1 31 19.34	14 12 50.5	136.82
5	23 59 56.87	2 55 55.5	146.96	5	1 33 23.85	14 26 31.4	136.31
6	0 1 47.97	3 10 37.3	146.98	6	1 35 28.78	14 40 9.3	135.79
7	0 3 39.24	3 25 19.2	146.99	7	1 37 34.14	14 53 44.1	135.26
8	0 5 30.67	3 40 1.2	146.99	8	1 39 39.92	15 7 15.7	134.71
9	0 7 22.27	3 54 43.1	146.98	9	1 41 46.14	15 20 43.9	134.14
10	0 9 14.04	4 9 25.0	146.96	10	1 43 52.79	15 34 8.8	133.56
11	0 11 6.00	4 24 6.8	146.93	11	1 45 59.89	15 47 30.2	132.97
12	0 12 58.14	4 38 48.5	146.90	12	1 48 7.44	16 0 48.1	132.36
13	0 14 50.47	4 53 29.9	146.85	13	1 50 15.45	16 14 2.3	131.73
14	0 16 43.00	5 8 11.1	146.80	14	1 52 23.91	16 27 12.7	131.09
15	0 18 35.73	5 22 51.9	146.74	15	1 54 32.84	16 40 19.3	130.43
16	0 20 28.67	5 37 32.3	146.66	16	1 56 42.23	16 53 21.9	129.76
17	0 22 21.83	5 52 12.3	146.58	17	1 58 52.10	17 6 20.5	129.07
18	0 24 15.20	6 6 51.9	146.49	18	2 1 2.44	17 19 14.9	128.36
19	0 26 8.79	6 21 30.8	146.39	19	2 3 13.26	17 32 5.1	127.63
20	0 28 2.61	6 36 9.2	146.28	20	2 5 24.57	17 44 50.9	126.89
21	0 29 56.67	6 50 46.9	146.15	21	2 7 36.37	17 57 32.3	126.14
22	0 31 50.97	7 5 23.8	146.02	22	2 9 48.66	18 10 9.2	125.36
23	0 33 45.52	7 20 0.0	145.88	23	2 12 1.45	18 22 41.4	124.57

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 13.				SATURDAY 15.			
0	2 14 14.74	N.18 35 8.8	123.76	0	4 11 30.30	N.26 22 24.1	61.87
1	2 16 28.55	18 47 31.4	122.93	1	4 14 10.04	26 28 35.4	60.09
2	2 18 42.87	18 59 49.0	122.08	2	4 16 50.27	26 34 35.9	58.29
3	2 20 57.70	19 12 1.5	121.22	3	4 19 30.96	26 40 25.7	56.46
4	2 23 13.05	19 24 8.9	120.34	4	4 22 12.12	26 46 4.5	54.62
5	2 25 28.93	19 36 11.0	119.44	5	4 24 53.74	26 51 32.3	52.77
6	2 27 45.34	19 48 7.6	118.52	6	4 27 35.81	26 56 48.9	50.89
7	2 30 2.27	19 59 58.8	117.58	7	4 30 18.32	27 1 54.3	49.00
8	2 32 19.74	20 11 44.3	116.63	8	4 33 1.26	27 6 48.3	47.09
9	2 34 37.74	20 23 24.1	115.65	9	4 35 44.63	27 11 30.9	45.17
10	2 36 56.28	20 34 58.0	114.66	10	4 38 28.41	27 16 2.0	43.23
11	2 39 15.36	20 46 26.0	113.64	11	4 41 12.60	27 20 21.4	41.27
12	2 41 34.99	20 57 47.9	112.61	12	4 43 57.18	27 24 29.0	39.30
13	2 43 55.16	21 9 3.6	111.56	13	4 46 42.15	27 28 24.8	37.31
14	2 46 15.89	21 20 13.0	110.49	14	4 49 27.50	27 32 8.7	35.30
15	2 48 37.16	21 31 16.0	109.40	15	4 52 13.21	27 35 40.5	33.28
16	2 50 58.99	21 42 12.4	108.29	16	4 54 59.27	27 39 0.2	31.25
17	2 53 21.37	21 53 2.2	107.16	17	4 57 45.68	27 42 7.8	29.20
18	2 55 44.32	22 3 45.2	106.00	18	5 0 32.41	27 45 3.0	27.14
19	2 58 7.82	22 14 21.2	104.83	19	5 3 19.47	27 47 45.9	25.07
20	3 0 31.88	22 24 50.2	103.64	20	5 6 6.83	27 50 16.4	22.99
21	3 2 56.50	22 35 12.1	102.43	21	5 8 54.49	27 52 34.3	20.89
22	3 5 21.67	22 45 26.7	101.19	22	5 11 42.43	27 54 39.7	18.79
23	3 7 47.41	N.22 55 33.9	99.94	23	5 14 30.65	N.27 56 32.4	16.67
FRIDAY 14.				SUNDAY 16.			
0	3 10 13.71	N.23 5 33.5	98.66	0	5 17 19.12	N.27 58 12.5	14.53
1	3 12 40.58	23 15 25.5	97.37	1	5 20 7.84	27 59 39.7	12.40
2	3 15 8.00	23 25 9.8	96.05	2	5 22 56.80	28 0 54.1	10.25
3	3 17 35.99	23 34 46.1	94.71	3	5 25 45.97	28 1 55.7	8.09
4	3 20 4.54	23 44 14.4	93.35	4	5 28 35.34	28 2 44.3	5.93
5	3 22 33.65	23 53 34.6	91.98	5	5 31 24.91	28 3 19.9	3.76
6	3 25 3.33	24 2 46.4	90.58	6	5 34 14.66	28 3 42.5	1.58
7	3 27 33.55	24 11 49.9	89.16	7	5 37 4.57	28 3 52.0	0.59
8	3 30 4.34	24 20 44.9	87.71	8	5 39 54.63	28 3 48.4	2.78
9	3 32 35.68	24 29 31.2	86.25	9	5 42 44.82	28 3 31.8	4.97
10	3 35 7.58	24 38 8.7	84.77	10	5 45 35.14	28 3 1.9	7.16
11	3 37 40.02	24 46 37.4	83.27	11	5 48 25.56	28 2 18.9	9.36
12	3 40 13.01	24 54 57.0	81.74	12	5 51 16.08	28 1 22.7	11.57
13	3 42 46.55	25 3 7.5	80.20	13	5 54 6.68	28 0 13.2	13.78
14	3 45 20.63	25 11 8.7	78.63	14	5 56 57.34	27 58 50.5	15.98
15	3 47 55.25	25 19 0.5	77.04	15	5 59 48.05	27 57 14.6	18.19
16	3 50 30.40	25 26 42.8	75.44	16	6 2 38.79	27 55 25.4	20.40
17	3 53 6.08	25 34 15.5	73.81	17	6 5 29.56	27 53 23.0	22.61
18	3 55 42.29	25 41 38.4	72.16	18	6 8 20.33	27 51 7.3	24.82
19	3 58 19.02	25 48 51.4	70.50	19	6 11 11.10	27 48 38.3	27.02
20	4 0 56.27	25 55 54.4	68.81	20	6 14 1.85	27 45 56.2	29.23
21	4 3 34.03	26 2 47.3	67.10	21	6 16 52.55	27 43 0.8	31.43
22	4 6 12.29	26 9 30.0	65.38	22	6 19 43.21	27 39 52.1	33.63
23	4 8 51.05	26 16 2.3	63.64	23	6 22 33.80	27 36 30.3	35.82
24	4 11 30.30	N.26 22 24.1		24	6 25 24.31	N.27 32 55.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 17.				WEDNESDAY 19.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	6 25 24.31	N.27 32 55.4	38.02	0	8 36 25.91	N.20 45 14.8	126.92
1	6 28 14.73	27 29 7.3	40.20	1	8 38 59.52	20 32 33.3	128.27
2	6 31 5.04	27 25 6.0	42.38	2	8 41 32.65	20 19 43.6	129.60
3	6 33 55.23	27 20 51.7	44.55	3	8 44 5.27	20 6 46.0	130.90
4	6 36 45.29	27 16 24.4	46.72	4	8 46 37.40	19 53 40.6	132.18
5	6 39 35.19	27 11 44.1	48.87	5	8 49 9.04	19 40 27.4	133.44
6	6 42 24.93	27 6 50.8	51.02	6	8 51 40.18	19 27 6.8	134.67
7	6 45 14.50	27 1 44.6	53.16	7	8 54 10.82	19 13 38.8	135.87
8	6 48 3.89	26 56 25.7	55.29	8	8 56 40.96	19 0 3.5	137.06
9	6 50 53.07	26 50 53.9	57.41	9	8 59 10.60	18 46 21.1	138.22
10	6 53 42.04	26 45 9.4	59.52	10	9 1 39.75	18 32 31.8	139.35
11	6 56 30.78	26 39 12.3	61.61	11	9 4 8.41	18 18 35.7	140.45
12	6 59 19.29	26 33 2.6	63.70	12	9 6 36.57	18 4 33.0	141.53
13	7 2 7.54	26 26 40.4	65.77	13	9 9 4.24	17 50 23.8	142.59
14	7 4 55.53	26 20 5.7	67.83	14	9 11 31.41	17 36 8.2	143.63
15	7 7 43.25	26 13 18.7	69.88	15	9 13 58.10	17 21 46.4	144.64
16	7 10 30.69	26 6 19.4	71.91	16	9 16 24.29	17 7 18.5	145.62
17	7 13 17.82	25 59 7.9	73.92	17	9 18 50.00	16 52 44.8	146.58
18	7 16 4.65	25 51 44.3	75.92	18	9 21 15.23	16 38 5.3	147.52
19	7 18 51.17	25 44 8.7	77.91	19	9 23 39.97	16 23 20.1	148.43
20	7 21 37.36	25 36 21.2	79.88	20	9 26 4.24	16 8 29.5	149.32
21	7 24 23.21	25 28 21.9	81.83	21	9 28 28.03	15 53 33.5	150.19
22	7 27 8.72	25 20 10.9	83.77	22	9 30 51.34	15 38 32.3	151.03
23	7 29 53.87	N.25 11 48.3	85.69	23	9 33 14.19	N.15 23 26.1	151.85
TUESDAY 18.				THURSDAY 20.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	7 32 38.65	N.25 3 14.1	87.59	0	9 35 36.56	N.15 8 15.0	152.65
1	7 35 23.06	24 54 28.5	89.47	1	9 37 58.47	14 52 59.1	153.42
2	7 38 7.09	24 45 31.7	91.33	2	9 40 19.92	14 37 38.5	154.17
3	7 40 50.73	24 36 23.6	93.17	3	9 42 40.91	14 22 13.5	154.89
4	7 43 33.97	24 27 4.5	95.00	4	9 45 1.44	14 6 44.1	155.60
5	7 46 16.80	24 17 34.5	96.80	5	9 47 21.53	13 51 10.5	156.28
6	7 48 59.23	24 7 53.7	98.58	6	9 49 41.17	13 35 32.8	156.94
7	7 51 41.23	23 58 2.2	100.35	7	9 52 0.37	13 19 51.1	157.57
8	7 54 22.81	23 48 0.1	102.09	8	9 54 19.13	13 4 5.7	158.18
9	7 57 3.96	23 37 47.5	103.81	9	9 56 37.45	12 48 16.6	158.78
10	7 59 44.66	23 27 24.6	105.51	10	9 58 55.35	12 32 23.9	159.34
11	8 2 24.93	23 16 51.5	107.19	11	10 1 12.82	12 16 27.8	159.89
12	8 5 4.75	23 6 8.3	108.84	12	10 3 29.86	12 0 28.4	160.42
13	8 7 44.11	22 55 15.2	110.47	13	10 5 46.49	11 44 25.9	160.92
14	8 10 23.01	22 44 12.4	112.08	14	10 8 2.71	11 28 20.3	161.40
15	8 13 1.45	22 32 59.9	113.67	15	10 10 18.52	11 12 11.9	161.86
16	8 15 39.42	22 21 37.8	115.24	16	10 12 33.93	10 56 0.7	162.30
17	8 18 16.92	22 10 6.3	116.78	17	10 14 48.95	10 39 46.8	162.72
18	8 20 53.94	21 58 25.6	118.30	18	10 17 3.57	10 23 30.5	163.12
19	8 23 30.48	21 46 35.8	119.80	19	10 19 17.80	10 7 11.7	163.50
20	8 26 6.54	21 34 37.0	121.27	20	10 21 31.65	9 50 50.7	163.86
21	8 28 42.12	21 22 29.4	122.72	21	10 23 45.12	9 34 27.5	164.20
22	8 31 17.21	21 10 13.0	124.14	22	10 25 58.22	9 18 2.3	164.51
23	8 33 51.81	20 57 48.1	125.55	23	10 28 10.96	9 1 35.2	164.81
24	8 36 25.01	N.20 45 14.8		24	10 30 22.22	N. 8 25 6.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
FRIDAY 21.				SUNDAY 23.			
0	h m s	N. ° ' "	"	0	h m s	S. ° ' "	"
1	10 30 23.33	8 45 6.3	165.09	1	12 11 0.54	4 27 18.2	159.23
2	10 32 35.35	8 28 35.7	165.35	2	12 13 1.99	4 43 13.6	158.78
3	10 34 47.01	8 12 3.6	165.59	3	12 15 3.35	4 59 6.3	158.32
4	10 36 58.33	7 55 30.1	165.81	4	12 17 4.62	5 14 56.2	157.84
5	10 39 9.31	7 38 55.2	166.01	5	12 19 5.83	5 30 43.3	157.35
6	10 41 19.96	7 22 19.1	166.20	6	12 21 6.96	5 46 27.5	156.86
7	10 43 30.27	7 5 41.8	166.37	7	12 23 8.02	6 2 8.6	156.35
8	10 45 40.27	6 49 3.6	166.51	8	12 25 9.02	6 17 46.8	155.83
9	10 47 49.94	6 32 24.5	166.64	9	12 27 9.96	6 33 21.8	155.30
10	10 49 59.30	6 15 44.6	166.76	10	12 29 10.85	6 48 53.6	154.76
11	10 52 8.35	5 59 4.0	166.85	11	12 31 11.70	7 4 22.2	154.21
12	10 54 17.11	5 42 22.9	166.93	12	12 33 12.50	7 19 47.5	153.65
13	10 56 25.57	5 25 41.3	166.99	13	12 35 13.27	7 35 9.4	153.08
14	10 58 33.74	5 8 59.3	167.03	14	12 37 14.00	7 50 27.9	152.50
15	11 0 41.62	4 52 17.1	167.06	15	12 39 14.70	8 5 42.9	151.91
16	11 2 49.22	4 35 34.7	167.07	16	12 41 15.39	8 20 54.4	151.31
17	11 4 56.56	4 18 52.2	167.07	17	12 43 16.05	8 36 2.3	150.70
18	11 7 3.62	4 2 9.8	167.04	18	12 45 16.69	8 51 6.6	150.08
19	11 9 10.42	3 45 27.5	167.01	19	12 47 17.33	9 6 7.1	149.45
20	11 11 16.97	3 28 45.5	166.95	20	12 49 17.96	9 21 3.9	148.82
21	11 13 23.26	3 12 3.7	166.88	21	12 51 18.59	9 35 56.8	148.17
22	11 15 29.31	2 55 22.4	166.80	22	12 53 19.22	9 50 45.8	147.51
23	11 17 35.12	2 38 41.6	166.69	23	12 55 19.86	10 5 30.9	146.85
24	11 19 40.70	2 22 1.4	166.58	24	12 57 20.52	10 20 12.0	146.17
SATURDAY 22.				MONDAY 24.			
0	h m s	N. ° ' "	"	0	h m s	S. ° ' "	"
1	11 21 46.04	2 5 21.9	166.45	1	12 59 21.18	10 34 49.1	145.49
2	11 23 51.17	1 48 43.2	166.30	2	13 1 21.87	10 49 22.1	144.79
3	11 25 56.08	1 32 5.3	166.14	3	13 3 22.59	11 3 50.8	144.09
4	11 28 0.78	1 15 28.5	165.97	4	13 5 23.33	11 18 15.4	143.38
5	11 30 5.28	0 58 52.6	165.78	5	13 7 24.11	11 32 35.8	142.66
6	11 32 9.57	0 42 17.9	165.57	6	13 9 24.93	11 46 51.8	141.94
7	11 34 13.67	0 25 44.5	165.36	7	13 11 25.78	12 1 3.4	141.20
8	11 36 17.58	0 9 12.3	165.13	8	13 13 26.68	12 15 10.7	140.46
9	11 38 21.31	0 7 18.5	164.88	9	13 15 27.63	12 29 13.4	139.70
10	11 40 24.86	0 23 47.8	164.62	10	13 17 28.63	12 43 11.7	138.94
11	11 42 28.24	0 40 15.6	164.35	11	13 19 29.69	12 57 5.4	138.17
12	11 44 31.46	0 56 41.7	164.06	12	13 21 30.81	13 10 54.4	137.39
13	11 46 34.51	1 13 6.1	163.76	13	13 23 31.99	13 24 38.8	136.61
14	11 48 37.41	1 29 28.7	163.45	14	13 25 33.24	13 38 18.5	135.82
15	11 50 40.16	1 45 49.5	163.13	15	13 27 34.56	13 51 53.4	135.01
16	11 52 42.76	2 2 8.3	162.79	16	13 29 35.95	14 5 23.5	134.20
17	11 54 45.22	2 18 25.1	162.45	17	13 31 37.43	14 18 48.8	133.38
18	11 56 47.55	2 34 39.8	162.09	18	13 33 38.98	14 32 9.1	132.56
19	11 58 49.75	2 50 52.3	161.71	19	13 35 40.62	14 45 24.4	131.72
20	12 0 51.83	3 7 2.7	161.33	20	13 37 42.35	14 58 34.8	130.88
21	12 2 53.79	3 23 10.7	160.93	21	13 39 44.16	15 11 40.1	130.03
22	12 4 55.63	3 39 16.3	160.52	22	13 41 46.08	15 24 40.3	129.17
23	12 6 57.37	3 55 19.5	160.10	23	13 43 48.08	15 37 35.4	128.30
24	12 8 59.00	4 11 20.1	159.67	24	13 45 50.19	15 50 25.2	127.43
	12 11 0.54	S. 4 27 18.2			13 47 52.41	S. 16 3 9.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 25.				THURSDAY 27.			
0	h m s	S. 16° 3' 9".	126° 55'	0	h m s	S. 24° 17' 57".	76° 00'
1	13 47 52.41	16 15 49.1	125° 66'	1	15 28 21.82	24 25 33.8	74° 79'
2	13 49 54.73	16 28 23.1	124° 76'	2	15 30 31.28	24 33 2.6	73° 57'
3	13 51 57.16	16 40 51.7	123° 86'	3	15 32 40.91	24 40 24.0	72° 36'
4	13 53 59.71	16 53 14.8	122° 94'	4	15 34 50.68	24 47 38.2	71° 13'
5	13 56 2.37	17 5 32.5	122° 03'	5	15 37 0.62	24 54 45.0	69° 90'
6	13 58 5.14	17 17 44.7	121° 10'	6	15 39 10.70	25 1 44.5	68° 67'
7	14 0 8.04	17 29 51.3	120° 16'	7	15 41 20.95	25 8 36.5	67° 43'
8	14 2 11.06	17 41 52.4	119° 22'	8	15 43 31.34	25 15 21.1	66° 18'
9	14 4 14.20	17 53 47.7	118° 27'	9	15 45 41.88	25 21 58.2	64° 93'
10	14 6 17.48	18 5 37.4	117° 32'	10	15 47 52.57	25 28 27.8	63° 68'
11	14 8 20.88	18 17 21.3	116° 36'	11	15 50 3.41	25 34 49.9	62° 42'
12	14 10 24.41	18 28 59.5	115° 39'	12	15 52 14.39	25 41 4.5	61° 16'
13	14 12 28.08	18 40 31.9	114° 41'	13	15 54 25.51	25 47 11.5	59° 89'
14	14 14 31.89	18 51 58.3	113° 42'	14	15 56 36.78	25 53 10.8	58° 61'
15	14 16 35.83	19 3 18.9	112° 43'	15	15 58 48.18	25 59 2.5	57° 34'
16	14 18 39.92	19 14 33.5	111° 43'	16	16 0 59.72	26 4 46.6	56° 05'
17	14 20 44.14	19 25 42.2	110° 42'	17	16 3 11.39	26 10 22.9	54° 77'
18	14 22 48.52	19 36 44.8	109° 42'	18	16 5 23.20	26 15 51.6	53° 48'
19	14 24 53.03	19 47 41.3	108° 40'	19	16 7 35.13	26 21 12.5	52° 18'
20	14 26 57.70	19 58 31.7	107° 37'	20	16 9 47.19	26 26 25.6	50° 89'
21	14 29 2.52	20 9 15.9	106° 34'	21	16 11 59.38	26 31 30.9	49° 58'
22	14 31 7.48	20 19 54.0	105° 30'	22	16 14 11.68	26 36 28.5	48° 28'
23	14 33 12.60	20 30 25.8	104° 25'	23	16 16 24.10	26 41 18.2	46° 97'
24	14 35 17.87	S. 20° 30' 25.8		24	16 18 36.64	S. 26° 41' 18.2	
WEDNESDAY 26.				FRIDAY 28.			
0	14 37 23.29	S. 20° 40' 51.3	103° 19'	0	16 20 49.29	S. 26° 46' 0.0	45° 66'
1	14 39 28.87	20 51 10.5	102° 13'	1	16 23 2.05	26 50 34.0	44° 34'
2	14 41 34.61	21 1 23.3	101° 06'	2	16 25 14.92	26 55 0.0	43° 02'
3	14 43 40.51	21 11 29.7	99° 99'	3	16 27 27.88	26 59 18.2	41° 70'
4	14 45 46.57	21 21 29.7	98° 91'	4	16 29 40.95	27 3 28.4	40° 37'
5	14 47 52.78	21 31 23.2	97° 82'	5	16 31 54.12	27 7 30.7	39° 04'
6	14 49 59.16	21 41 10.2	96° 73'	6	16 34 7.37	27 11 25.0	37° 71'
7	14 52 5.70	21 50 50.6	95° 63'	7	16 36 20.72	27 15 11.3	36° 38'
8	14 54 12.40	22 0 24.4	94° 52'	8	16 38 34.15	27 18 49.6	35° 04'
9	14 56 19.26	22 9 51.6	93° 41'	9	16 40 47.66	27 22 19.8	33° 70'
10	14 58 26.29	22 19 12.1	92° 29'	10	16 43 1.26	27 25 42.0	32° 36'
11	15 0 33.48	22 28 25.8	91° 17'	11	16 45 14.92	27 28 56.2	31° 01'
12	15 2 40.83	22 37 32.9	90° 04'	12	16 47 28.66	27 32 2.3	29° 66'
13	15 4 48.35	22 46 33.2	88° 90'	13	16 49 42.47	27 35 0.3	28° 32'
14	15 6 56.03	22 55 26.6	87° 76'	14	16 51 56.34	27 37 50.2	26° 96'
15	15 9 3.88	23 4 13.2	86° 61'	15	16 54 10.27	27 40 32.0	25° 61'
16	15 11 11.89	23 12 52.9	85° 45'	16	16 56 24.26	27 43 5.7	24° 26'
17	15 13 20.06	23 21 25.7	84° 29'	17	16 58 38.30	27 45 31.3	22° 90'
18	15 15 28.40	23 29 51.4	83° 13'	18	17 0 52.39	27 47 48.7	21° 54'
19	15 17 36.90	23 38 10.2	81° 95'	19	17 3 6.52	27 49 58.0	20° 18'
20	15 19 45.56	23 46 22.0	80° 77'	20	17 5 20.69	27 51 59.2	18° 82'
21	15 21 54.39	23 54 26.6	79° 59'	21	17 7 34.89	27 53 52.1	17° 46'
22	15 24 3.37	24 2 24.2	78° 40'	22	17 9 49.13	27 55 36.9	16° 10'
23	15 26 12.52	24 10 14.6	77° 20'	23	17 12 3.39	27 57 13.6	14° 74'
24	15 28 21.82	S. 24° 17' 57.8		24	17 14 17.67	S. 27° 58' 42.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
SATURDAY 29.				MONDAY 31.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	17 14 17.67	S. 27 58 42.0	13.37	0	19 0 42.39	S. 26 31 5.0	50.13
1	17 16 31.97	28 0 2.3	12.01	1	19 2 52.43	26 26 4.2	51.35
2	17 18 46.28	28 1 14.3	10.64	2	19 5 2.28	26 20 56.1	52.58
3	17 21 0.61	28 2 18.2	9.28	3	19 7 11.95	26 15 40.6	53.79
4	17 23 14.93	28 3 13.9	7.91	4	19 9 21.44	26 10 17.8	55.00
5	17 25 29.26	28 4 1.5	6.55	5	19 11 30.73	26 4 47.7	56.21
6	17 27 43.58	28 4 40.8	5.18	6	19 13 39.82	25 59 10.5	57.41
7	17 29 57.89	28 5 11.9	3.82	7	19 15 48.73	25 53 26.0	58.60
8	17 32 12.19	28 5 34.9	2.45	8	19 17 57.43	25 47 34.4	59.79
9	17 34 26.47	28 5 49.6	1.09	9	19 20 5.94	25 41 35.6	60.96
10	17 36 40.73	28 5 56.2	0.26	10	19 22 14.23	25 35 29.8	62.14
11	17 38 54.96	28 5 54.6	1.62	11	19 24 22.33	25 29 17.0	63.30
12	17 41 9.16	28 5 44.8	2.99	12	19 26 30.22	25 22 57.1	64.47
13	17 43 23.33	28 5 26.8	4.35	13	19 28 37.90	25 16 30.3	65.62
14	17 45 37.45	28 5 0.7	5.71	14	19 30 45.37	25 9 56.5	66.76
15	17 47 51.53	28 4 26.5	7.06	15	19 32 52.63	25 3 15.9	67.90
16	17 50 5.55	28 3 44.1	8.42	16	19 34 59.67	24 56 28.5	69.03
17	17 52 19.53	28 2 53.5	9.77	17	19 37 6.49	24 49 34.3	70.16
18	17 54 33.44	28 1 54.9	11.12	18	19 39 13.10	24 42 33.3	71.28
19	17 56 47.29	28 0 48.1	12.47	19	19 41 19.49	24 35 25.6	72.38
20	17 59 1.08	27 59 33.2	13.82	20	19 43 25.65	24 28 11.3	73.49
21	18 1 14.79	27 58 10.3	15.16	21	19 45 31.60	24 20 50.3	74.58
22	18 3 28.42	27 56 39.3	16.51	22	19 47 37.32	24 13 22.8	75.67
23	18 5 41.97	S. 27 55 0.2	17.85	23	19 49 42.81	S. 24 5 48.7	76.75
SUNDAY 30.				TUESDAY, FEB. 1.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	18 7 55.44	S. 27 53 13.1	19.18	0	19 51 48.07	S. 23 58 8.2	
1	18 10 8.82	27 51 18.0	20.52				
2	18 12 22.10	27 49 14.8	21.85				
3	18 14 35.29	27 47 3.7	23.18				
4	18 16 48.37	27 44 44.6	24.50				
5	18 19 1.35	27 42 17.6	25.82				
6	18 21 14.22	27 39 42.7	27.14				
7	18 23 26.96	27 36 59.8	28.45				
8	18 25 39.59	27 34 9.0	29.76				
9	18 27 52.10	27 31 10.4	31.07				
10	18 30 4.48	27 28 4.0	32.37				
11	18 32 16.73	27 24 49.7	33.67				
12	18 34 28.85	27 21 27.6	34.97				
13	18 36 40.83	27 17 57.8	36.26				
14	18 38 52.66	27 14 20.2	37.54				
15	18 41 4.35	27 10 34.9	38.82				
16	18 43 15.89	27 6 41.9	40.10				
17	18 45 27.27	27 2 41.3	41.37				
18	18 47 38.50	26 58 33.0	42.64				
19	18 49 49.57	26 54 17.2	43.90				
20	18 52 0.47	26 49 53.7	45.16				
21	18 54 11.21	26 45 22.8	46.41				
22	18 56 21.78	26 40 44.3	47.65				
23	18 58 32.17	26 35 58.4	48.89				
24	19 0 42.39	S. 26 31 5.0					

PHASES OF THE MOON.

	d	h	m
● New Moon	-	-	3 17 25.6
☾ First Quarter	-	-	11 19 22.6
○ Full Moon	-	-	18 11 48.6
☾ Last Quarter	-	-	25 8 45.0

	d	h
(Apogee	-	4 0
(Perigee	-	18 4
(Apogee	-	31 4

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.	
1	Spica W.	49 2 21	3028	50 31 59	3033	52 1 31	3036	53 30 59	3039	
	SUN E.	30 3 48	3450	28 42 28	3459	27 21 18	3467	26 0 17	3476	
6	SUN W.	24 37 31	3493	25 58 3	3486	27 18 43	3478	28 39 32	3471	
	α Pegasi E.	45 40 30	3484	44 19 48	3595	42 59 29	3527	41 39 35	3553	
	α Arietis E.	85 47 36	3072	84 18 52	3069	82 50 4	3066	81 21 13	3063	
7	SUN W.	35 25 30	3438	36 47 4	3431	38 8 46	3423	39 30 36	3416	
	α Pegasi E.	35 8 19	3738	33 52 12	3791	32 37 1	3852	31 22 52	3923	
	α Arietis E.	73 55 54	3045	72 26 37	3046	70 57 13	3036	69 27 45	3031	
	Aldebaran E.	105 32 8	3105	104 4 4	3099	102 35 53	3092	101 7 34	3087	
	Jupiter E.	110 46 30	3013	109 16 34	3009	107 46 33	3004	106 16 25	2999	
8	SUN W.	46 21 49	3378	47 44 30	3379	49 7 21	3381	50 30 22	3353	
	α Arietis E.	61 58 45	3003	60 28 36	2997	58 58 19	2990	57 27 54	2984	
	Aldebaran E.	93 44 9	3055	92 15 4	3048	90 45 50	3040	89 16 27	3033	
	Jupiter E.	98 43 59	2968	97 13 6	2961	95 42 5	2954	94 10 55	2946	
9	SUN W.	57 28 6	3304	58 52 13	3295	60 16 33	3281	61 41 7	3270	
	α Arietis E.	49 53 38	2947	48 22 19	2939	46 50 50	2931	45 19 10	2923	
	Aldebaran E.	81 47 7	2993	80 16 45	2983	78 46 11	2974	77 15 26	2965	
	Jupiter E.	86 32 35	2905	85 0 23	2896	83 27 59	2886	81 55 22	2877	
10	SUN W.	68 47 21	3208	70 13 21	3194	71 39 38	3181	73 6 10	3166	
	Fomalhaut W.	35 12 27	3874	36 26 13	3788	37 41 28	3708	38 58 6	3635	
	α Arietis E.	37 38 13	2880	36 5 29	2873	34 32 35	2864	32 59 30	2856	
	Aldebaran E.	69 38 44	2916	68 6 46	2906	66 34 35	2896	65 2 11	2885	
	Jupiter E.	74 9 5	2824	72 35 8	2811	71 0 55	2800	69 26 27	2787	
11	SUN W.	80 23 18	3091	81 51 39	3074	83 20 21	3058	84 49 22	3041	
	Fomalhaut W.	45 39 7	3347	47 2 24	3302	48 26 34	3257	49 51 36	3215	
	Mars W.	26 47 10	2999	28 17 24	2981	29 48 0	2965	31 18 56	2948	
	α Pegasi W.	24 58 29	4156	26 7 37	3983	27 19 33	3836	28 33 58	3708	
	Aldebaran E.	57 16 46	2832	55 43 0	2821	54 9 0	2811	52 34 47	2801	
	Jupiter E.	61 29 59	2723	59 53 50	2709	58 37 22	2696	56 40 37	2681	
	Saturn E.	119 0 57	2699	117 24 16	2684	115 47 15	2669	114 9 53	2654	
12	SUN W.	92 19 48	2953	93 51 0	2934	95 22 36	2916	96 54 34	2898	
	Fomalhaut W.	57 8 24	3035	58 37 54	3003	60 8 3	2972	61 38 51	2942	
	Mars W.	38 59 7	2859	40 32 18	2842	42 5 51	2823	43 39 49	2804	
	α Pegasi W.	35 15 44	3253	36 49 51	3187	38 7 16	3126	39 54 54	3071	
	Aldebaran E.	44 40 32	2757	43 5 8	2750	41 29 35	2745	39 53 54	2741	
	Jupiter E.	48 32 1	2610	46 53 19	2596	45 14 18	2580	43 34 56	2566	
	Pollux E.	86 39 23	2605	85 0 35	2589	83 21 25	2572	81 41 51	2554	
	Saturn E.	105 57 50	2574	104 18 19	2556	102 38 24	2540	100 58 7	2522	
13	SUN W.	104 40 29	2801	106 14 55	2782	107 49 46	2763	109 25 2	2744	
	Fomalhaut W.	69 21 57	2805	70 56 18	2787	72 31 11	2756	74 6 36	2732	
	Mars W.	51 35 45	2710	53 12 12	2691	54 49 4	2672	56 26 22	2652	
	α Pegasi W.	47 8 41	2845	48 42 11	2807	50 26 30	2771	51 51 36	2737	
	Jupiter E.	35 13 20	2500	33 34 7	2488	31 50 37	2477	30 8 52	2468	
	Pollux E.	73 18 0	2467	71 36 0	2449	69 53 35	2431	68 10 45	2414	
	Saturn E.	92 30 34	2435	90 47 49	2417	89 4 38	2399	87 22 2	2381	
	Regulus E.	110 11 21	2450	108 24 20	2440	106 26 22	2422	104 28 20	2404	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
1	Spica W.	55 0 23	3043	56 29 42	3047	57 58 57	3049	59 28 9	3052
	Sun E.	24 39 26	3485	23 18 45	3496	21 58 16	3507	20 37 59	3519
6	Sun W.	30 0 28	3464	31 21 32	3457	32 42 44	3451	34 4 3	3444
	α Pegasi E.	40 20 9	3382	39 1 15	3613	37 42 55	3650	36 25 15	3692
	α Arietis E.	79 52 18	3060	78 23 19	3056	76 54 15	3052	75 25 7	3048
7	Sun W.	40 52 34	3409	42 14 40	3402	43 36 54	3394	44 59 17	3386
	α Pegasi E.	30 9 55	4005	28 58 20	4099	27 48 17	4210	26 40 0	4340
	α Arietis E.	67 58 10	3028	66 28 29	3020	64 58 41	3014	63 28 46	3009
	Aldebaran E.	99 39 9	3081	98 10 36	3074	96 41 55	3068	95 13 6	3061
	Jupiter E.	104 46 11	2993	103 15 49	2987	101 45 20	2981	100 14 44	2974
8	Sun W.	51 53 32	3343	53 16 54	3334	54 40 26	3324	56 4 10	3313
	α Arietis E.	55 57 21	2977	54 26 39	2969	52 55 48	2962	51 24 48	2954
	Aldebaran E.	87 46 55	3025	86 17 13	3017	84 47 21	3009	83 17 19	3001
	Jupiter E.	92 39 35	2939	91 8 6	2931	89 36 26	2923	88 4 36	2914
9	Sun W.	63 5 53	3258	64 30 53	3246	65 56 8	3234	67 21 37	3221
	α Arietis E.	43 47 20	2914	42 15 19	2906	40 43 8	2898	39 10 46	2889
	Aldebaran E.	75 44 30	2956	74 13 22	2946	72 42 2	2936	71 10 29	2927
	Jupiter E.	80 22 34	2866	78 49 32	2856	77 16 17	2845	75 42 48	2835
10	Sun W.	74 33 0	3152	76 0 7	3137	77 27 32	3122	78 55 15	3106
	Fomalhaut W.	40 16 3	3569	41 35 11	3507	42 55 27	3450	44 16 47	3397
	α Arietis E.	31 26 15	2849	29 52 51	2843	28 19 19	2838	26 45 41	2834
	Aldebaran E.	63 29 33	2875	61 56 42	2864	60 23 37	2853	58 50 18	2843
	Jupiter E.	67 51 42	2775	66 16 42	2763	64 41 25	2750	63 5 51	2736
11	Sun W.	86 18 44	3023	87 48 28	3006	89 18 33	2989	90 48 59	2971
	Fomalhaut W.	51 17 27	3176	52 44 5	3138	54 11 28	3102	55 39 35	3068
	Mars W.	32 50 14	2931	34 21 54	2914	35 53 55	2895	37 26 20	2878
	α Pegasi W.	29 50 37	3394	31 9 18	3494	32 29 49	3404	33 52 1	3325
	Aldebaran E.	51 0 21	2791	49 25 41	2782	47 50 50	2773	46 15 46	2765
	Jupiter E.	55 3 32	2667	53 26 8	2653	51 48 25	2639	50 10 23	2624
	Saturn E.	112 32 12	2638	110 54 9	2623	109 15 45	2606	107 36 58	2590
12	Sun W.	98 26 56	2878	99 59 43	2860	101 32 53	2840	103 6 29	2821
	Fomalhaut W.	63 10 17	2913	64 42 19	2885	66 14 58	2858	67 48 10	2831
	Mars W.	45 14 11	2785	46 48 58	2767	48 24 9	2749	49 59 44	2729
	α Pegasi W.	44 3 39	3019	42 33 28	2971	44 4 17	2927	45 36 2	2885
	Aldebaran E.	38 18 8	2738	36 42 19	2737	35 6 29	2740	33 30 42	2745
	Jupiter E.	41 55 15	2532	40 15 14	2539	38 34 55	2525	36 54 17	2512
	Pollux E.	80 1 53	2537	78 21 31	2520	76 40 45	2502	74 59 35	2484
	Saturn E.	99 17 25	2505	97 36 19	2488	95 54 49	2470	94 12 54	2453
13	Sun W.	111 0 44	2724	112 36 52	2705	114 13 25	2685	115 50 25	2666
	Fomalhaut W.	75 42 32	2710	77 19 0	2687	78 55 58	2666	80 33 24	2644
	Mars W.	58 4 6	2634	59 42 15	2614	61 20 51	2595	62 59 53	2576
	α Pegasi W.	53 27 26	2704	55 4 1	2673	56 41 17	2643	58 19 13	2614
	Jupiter E.	28 26 54	2461	26 44 46	2456	25 2 31	2454	23 20 12	2455
	Pollux E.	66 27 30	2395	64 43 48	2377	62 59 41	2360	61 15 9	2343
	Saturn E.	85 37 0	2363	83 52 32	2345	82 7 38	2328	80 22 19	2309
	Regulus E.	103 20 11	2387	101 36 17	2368	99 51 56	2350	98 7 10	2332

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
14	SUN W.	117 27 50	2647	119 5 41	2628	120 43 58	2610	122 22 40	2591
	Fomalhaut W.	82 11 19	2624	83 49 42	2604	85 28 31	2585	87 7 47	2567
	Mars W.	64 39 21	2556	66 19 16	2538	67 59 36	2520	69 40 22	2501
	α Pegasi W.	59 57 49	2586	61 37 3	2560	63 16 53	2534	64 57 19	2509
	Pollux E.	59 30 12	2325	57 44 49	2307	55 59 0	2291	54 12 47	2273
	Saturn E.	78 36 33	2291	76 50 21	2274	75 3 43	2256	73 16 39	2239
	Regulus E.	96 21 57	2315	94 36 19	2296	92 50 14	2279	91 3 44	2262
15	Mars W.	78 10 35	2412	79 53 52	2396	81 37 33	2380	83 21 37	2364
	α Pegasi W.	73 27 44	2399	75 11 20	2379	76 55 25	2360	78 39 57	2343
	α Arietis W.	30 11 53	2246	31 59 12	2224	33 47 4	2203	35 35 28	2183
	Pollux E.	45 15 33	2194	43 26 56	2179	41 37 57	2165	39 48 36	2151
	Saturn E.	64 14 58	2155	62 25 23	2140	60 35 25	2124	58 45 3	2109
	Regulus E.	82 4 51	2178	80 15 50	2163	78 26 26	2147	76 36 38	2132
16	Mars W.	92 7 29	2292	93 53 41	2279	95 40 12	2267	97 27 0	2255
	α Arietis W.	44 44 25	2098	46 35 27	2084	48 26 51	2071	50 18 35	2058
	Aldebaran W.	16 23 2	3149	17 50 12	2936	19 21 45	2773	20 56 48	2646
	Pollux E.	30 37 5	2095	28 45 58	2087	26 54 38	2081	25 3 9	2076
	Saturn E.	49 27 43	2041	47 35 13	2030	45 42 25	2018	43 49 19	2008
	Regulus E.	67 22 5	2063	65 30 9	2051	63 37 54	2039	61 45 21	2029
17	α Arietis W.	59 41 44	2008	61 35 6	2000	63 28 40	1993	65 22 25	1987
	Aldebaran W.	29 25 31	2296	31 11 37	2257	32 58 40	2223	34 46 33	2194
	Jupiter W.	23 56 45	2086	25 48 6	2063	27 40 2	2045	29 32 26	2030
	Saturn E.	34 19 58	1964	32 25 27	1957	30 30 45	1952	28 35 55	1947
	Regulus E.	52 18 44	1984	50 24 44	1978	48 30 35	1971	46 36 15	1966
	Spica E.	106 20 4	1987	104 26 10	1980	102 32 5	1974	100 37 50	1969
18	α Arietis W.	74 52 59	1971	76 47 19	1971	78 41 39	1971	80 35 59	1972
	Aldebaran W.	43 54 41	2106	45 45 31	2096	47 36 36	2088	49 27 53	2082
	Jupiter W.	38 59 10	1986	40 53 6	1982	42 47 9	1979	44 41 16	1977
	Regulus E.	37 3 2	1953	35 8 13	1952	33 13 23	1953	31 18 34	1954
	Spica E.	91 4 58	1955	89 10 13	1955	87 15 28	1955	85 20 43	1956
19	α Arietis W.	90 6 46	1990	92 0 36	1997	93 54 15	2004	95 47 43	2012
	Aldebaran W.	58 45 53	2075	60 37 31	2077	62 29 6	2081	64 20 35	2086
	Jupiter W.	54 11 50	1987	56 5 44	1992	57 59 30	1998	59 53 8	2005
	Pollux W.	15 32 37	2072	17 24 19	2059	19 16 22	2052	21 8 35	2050
	Spica E.	75 47 57	1976	73 53 45	1982	71 59 43	1989	70 5 51	1998
20	Aldebaran W.	73 35 37	2125	75 25 58	2136	77 16 3	2147	79 5 51	2159
	Jupiter W.	69 18 7	2052	71 10 21	2063	73 2 18	2075	74 53 55	2088
	Pollux W.	30 29 18	2072	32 21 0	2081	34 12 28	2092	36 3 39	2103
	Spica E.	60 40 4	2047	58 47 43	2060	56 55 42	2072	55 4 0	2086
	Antares E.	106 32 11	2044	104 39 45	2056	102 47 38	2068	100 55 50	2082
	Venus E.	117 58 23	2299	116 12 22	2309	114 26 36	2321	112 41 7	2333
21	Aldebaran W.	88 9 50	2231	89 57 31	2247	91 44 48	2264	93 31 40	2281
	Jupiter W.	84 6 47	2162	85 56 12	2178	87 45 13	2194	89 33 49	2211
	Pollux W.	45 14 58	2171	47 4 10	2186	48 52 59	2202	50 41 24	2218
	Saturn W.	26 32 56	2136	28 23 1	2151	30 12 43	2167	32 2 1	2184
	Spica E.	45 50 58	2162	44 1 33	2178	42 12 32	2196	40 23 58	2213

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
14	SUN W.	124 1 48	2572	125 41 21	2554	127 21 20	2537	129 1 42	2519
	Fomalhaut W.	88 47 28	2549	90 27 33	2532	92 8 2	2516	93 48 53	2501
	Mars W.	71 21 34	2483	73 3 11	2465	74 45 14	2447	76 27 42	2429
	α Pegasi W.	66 38 19	2485	68 19 53	2462	70 1 59	2440	71 44 36	2419
	Pollux E.	52 26 8	2257	50 39 5	2241	48 51 38	2225	47 3 47	2209
	Saturn E.	71 29 9	2222	69 41 14	2204	67 52 53	2188	66 4 8	2172
	Regulus E.	89 16 48	2245	87 29 27	2227	85 41 40	2210	83 53 28	2194
15	Mars W.	85 6 4	2348	86 50 54	2333	88 36 5	2319	90 21 37	2305
	α Pegasi W.	80 24 54	2326	82 10 16	2310	83 56 1	2294	85 42 9	2280
	α Arietis W.	37 24 21	2164	39 13 43	2146	41 3 32	2130	42 53 46	2113
	Pollux E.	37 58 55	2138	36 8 54	2126	34 18 34	2115	32 27 58	2104
	Saturn E.	56 54 18	2095	55 3 11	2081	53 11 42	2068	51 19 53	2054
	Regulus E.	74 46 27	2117	72 55 53	2103	71 4 58	2089	69 13 42	2075
16	Mars W.	99 14 5	2244	101 1 27	2235	102 49 2	2225	104 36 52	2217
	α Arietis W.	52 10 39	2046	54 3 1	2035	55 55 40	2025	57 48 35	2016
	Aldebaran W.	22 34 40	2545	24 14 50	2464	25 56 53	2397	27 40 32	2342
	Pollux E.	23 11 32	2073	21 19 51	2074	19 28 11	2079	17 36 39	2088
	Saturn E.	41 55 57	1997	40 2 18	1988	38 8 25	1979	36 14 18	1971
	Regulus E.	59 52 32	2018	57 59 26	2009	56 6 6	2000	54 12 31	1992
17	α Arietis W.	67 16 19	1983	69 10 20	1979	71 4 28	1975	72 58 42	1973
	Aldebaran W.	36 35 9	2171	38 24 20	2151	40 14 2	2133	42 4 10	2118
	Jupiter W.	31 25 13	2017	33 18 20	2007	35 11 44	1998	37 5 21	1991
	Saturn E.	26 40 57	1943	24 45 53	1940	22 50 44	1938	20 55 31	1937
	Regulus E.	44 41 48	1962	42 47 14	1958	40 52 34	1955	38 57 49	1954
	Spica E.	98 43 27	1965	96 48 57	1961	94 54 21	1958	92 59 41	1956
18	α Arietis W.	82 30 18	1974	84 24 33	1977	86 18 44	1981	88 12 49	1985
	Aldebaran W.	51 19 20	2078	53 10 53	2074	55 2 32	2073	56 54 12	2073
	Jupiter W.	46 35 26	1977	48 29 36	1979	50 23 44	1981	52 17 49	1983
	Regulus E.	29 23 47	1956	27 29 3	1960	25 34 25	1963	23 39 52	1968
	Spica E.	83 26 0	1959	81 31 21	1962	79 36 46	1966	77 42 18	1970
19	α Arietis W.	97 40 59	2021	99 34 1	2030	101 26 49	2041	103 19 20	2051
	Aldebaran W.	66 11 56	2091	68 3 9	2098	69 54 11	2106	71 45 1	2115
	Jupiter W.	61 46 34	2013	63 39 48	2021	65 32 50	2031	67 25 36	2041
	Pollux W.	23 0 51	2050	24 53 8	2053	26 45 20	2058	28 37 24	2064
	Spica E.	68 12 13	2006	66 18 47	2015	64 25 37	2025	62 32 42	2036
20	Aldebaran W.	80 55 20	2172	82 44 29	2186	84 33 18	2200	86 21 45	2215
	Jupiter W.	76 45 13	2102	78 36 9	2116	80 26 44	2130	82 16 57	2145
	Pollux W.	37 54 34	2115	39 45 11	2128	41 35 28	2141	43 25 24	2156
	Spica E.	53 12 39	2100	51 21 40	2114	49 31 2	2130	47 40 49	2145
	Antares E.	99 4 23	2095	97 13 16	2110	95 22 32	2125	93 32 11	2140
	Venus E.	110 55 56	2346	109 11 4	2360	107 26 32	2375	105 42 22	2391
21	Aldebaran W.	95 18 7	2300	97 4 7	2318	98 49 41	2337	100 34 47	2356
	Jupiter W.	91 22 0	2229	93 9 44	2247	94 57 2	2265	96 43 53	2284
	Pollux W.	52 29 24	2235	54 17 0	2252	56 4 10	2270	57 50 54	2287
	Saturn W.	33 50 53	2201	35 39 19	2218	37 27 20	2236	39 14 54	2254
	Spica E.	38 35 49	2231	36 48 7	2249	35 0 53	2268	33 14 7	2287

MEAN TIME.											
LUNAR DISTANCES.											
Day of the Month.	Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.	
21	Antares	E.	91 42 12	2156	89 52 38	2172	88 3 29	2188	86 14 44	2206	
	Venus	E.	103 58 35	2407	102 15 10	2423	100 32 8	2441	98 49 32	2459	
22	Jupiter	W.	98 30 16	2302	100 16 12	2321	102 1 41	2340	103 46 42	2360	
	Pollux	W.	59 37 12	2306	61 23 3	2324	63 8 28	2343	64 53 25	2361	
	Saturn	W.	41 2 1	2272	42 48 41	2291	44 34 54	2309	46 20 40	2328	
	Regulus	W.	22 38 8	2296	24 24 14	2315	26 9 52	2333	27 55 3	2352	
	Antares	E.	77 17 33	2296	75 31 27	2315	73 45 49	2333	72 0 38	2352	
	Venus	E.	90 23 0	2556	88 43 4	2575	87 3 35	2596	85 24 34	2617	
	SUN	E.	131 34 33	2626	129 56 14	2646	128 18 21	2666	126 40 55	2686	
23	Pollux	W.	73 31 26	2456	75 13 41	2475	76 55 29	2494	78 36 50	2513	
	Saturn	W.	55 2 38	2423	56 45 40	2443	58 28 14	2461	60 10 22	2481	
	Regulus	W.	36 34 6	2448	38 16 32	2467	39 58 31	2486	41 40 4	2506	
	Antares	E.	63 21 36	2448	61 39 10	2467	59 57 11	2487	58 15 39	2506	
	Venus	E.	77 16 43	2725	75 40 36	2746	74 4 57	2769	72 29 48	2790	
	SUN	E.	118 40 33	2788	117 5 49	2809	115 31 33	2829	113 57 43	2849	
24	Pollux	W.	86 57 2	2607	88 35 48	2625	90 14 9	2643	91 52 5	2661	
	Saturn	W.	68 34 24	2573	70 13 56	2591	71 53 3	2610	73 31 45	2627	
	Regulus	W.	50 1 9	2599	51 40 5	2618	53 18 36	2635	54 56 43	2653	
	Antares	E.	49 54 36	2600	48 15 41	2618	46 37 10	2636	44 59 4	2654	
	Venus	E.	64 41 12	2901	63 8 55	2923	61 37 5	2945	60 5 43	2967	
	SUN	E.	106 15 6	2950	104 43 51	2970	103 13 0	2989	101 42 34	3009	
25	Pollux	W.	99 55 56	2746	101 31 35	2762	103 6 53	2777	104 41 51	2793	
	Saturn	W.	81 39 26	2711	83 15 52	2727	84 51 56	2742	86 27 40	2758	
	Regulus	W.	63 1 26	2738	64 37 15	2753	66 12 44	2770	67 47 51	2785	
	Antares	E.	36 54 25	2739	35 18 37	2754	33 43 9	2770	32 8 2	2786	
	Venus	E.	52 35 49	3077	51 7 11	3100	49 39 1	3121	48 11 17	3144	
	SUN	E.	94 16 12	3100	92 48 3	3117	91 20 14	3134	89 52 46	3151	
26	Saturn	W.	94 21 27	2828	95 55 18	2841	97 28 52	2854	99 2 10	2866	
	Regulus	W.	75 38 39	2856	77 11 55	2869	78 44 53	2882	80 17 35	2894	
	Spica	W.	21 42 28	2876	23 15 17	2887	24 47 53	2898	26 20 15	2909	
	Venus	E.	40 59 25	3258	39 34 24	3283	38 9 53	3307	36 45 50	3333	
	SUN	E.	82 40 15	3228	81 14 39	3242	79 49 19	3256	78 24 16	3269	
27	Saturn	W.	106 44 55	2920	108 16 48	2931	109 48 27	2940	111 19 55	2950	
	Regulus	W.	87 57 21	2949	89 28 38	2960	90 59 41	2969	92 30 33	2977	
	Spica	W.	33 58 46	2958	35 29 51	2968	37 0 44	2977	38 31 26	2985	
	Venus	E.	29 53 30	3484	28 32 48	3522	27 12 48	3562	25 53 32	3608	
	SUN	E.	71 22 44	3329	69 59 6	3340	68 35 41	3350	67 12 27	3360	
28	Regulus	W.	100 2 15	3017	101 32 7	3023	103 1 51	3029	104 31 28	3035	
	Spica	W.	46 2 28	3022	47 32 13	3028	49 1 51	3034	50 31 21	3040	
	SUN	E.	60 18 58	3403	58 56 45	3409	57 34 39	3416	56 12 41	3423	
29	Spica	W.	57 57 17	3062	59 26 13	3066	60 55 4	3069	62 23 51	3072	
	SUN	E.	49 24 30	3448	48 3 8	3453	46 41 51	3456	45 20 38	3459	
30	Spica	W.	69 47 4	3082	71 15 36	3083	72 44 7	3083	74 12 38	3084	
	Antares	W.	23 53 12	3080	25 21 46	3081	26 50 19	3081	28 18 52	3081	
	SUN	E.	38 35 20	3471	37 14 23	3472	35 53 27	3473	34 32 33	3474	

MEAN TIME.

LUNAR DISTANCES.

Star's Name and Position.	Midnight.	P.L. of diff.	XV ^b .	P.L. of diff.	XVIII ^b .	P.L. of diff.	XXI ^b .	P.L. of diff.
21. Antares E.	84 26 25	2223	82 38 32	2241	80 51 6	2259	79 4 6	2277
Venus E.	97 7 21	2477	95 25 36	2496	93 44 17	2515	92 3 25	2535
22. Jupiter W.	105 31 14	2379	107 15 19	2399	108 58 55	2419	110 42 3	2439
Pollux W.	66 37 56	2380	68 21 59	2399	70 5 35	2418	71 48 44	2437
Saturn W.	48 5 59	2347	49 50 50	2366	51 35 13	2385	53 19 9	2404
Regulus W.	29 39 47	2371	31 24 3	2390	33 7 52	2410	34 51 13	2429
Antares E.	70 15 54	2371	68 31 38	2391	66 47 50	2410	65 4 29	2429
Venus E.	83 46 2	2638	82 7 59	2660	80 30 25	2681	78 53 20	2702
Sun E.	125 3 56	2707	123 27 25	2726	121 51 20	2747	120 15 43	2768
23. Pollux W.	80 17 45	2532	81 58 13	2551	83 38 15	2570	85 17 51	2588
Saturn W.	61 52 2	2499	63 33 17	2518	65 14 5	2536	66 54 28	2555
Regulus W.	43 21 9	2525	45 1 48	2543	46 42 1	2562	48 21 48	2581
Antares E.	56 34 34	2525	54 53 56	2543	53 13 43	2563	51 33 57	2581
Venus E.	70 55 7	2812	69 20 55	2835	67 47 13	2856	66 13 58	2879
Sun E.	112 24 19	2870	110 51 22	2891	109 18 51	2911	107 46 46	2931
24. Pollux W.	93 29 38	2678	95 6 47	2696	96 43 32	2712	98 19 56	2730
Saturn W.	75 10 3	2644	76 47 58	2661	78 25 30	2678	80 2 39	2695
Regulus W.	56 34 26	2671	58 11 45	2688	59 48 41	2705	61 25 14	2721
Antares E.	43 21 22	2671	41 44 3	2689	40 7 8	2705	38 30 35	2722
Venus E.	58 34 49	2989	57 4 23	3012	55 34 25	3033	54 4 53	3056
Sun E.	100 12 32	3027	98 42 53	3046	97 13 37	3064	95 44 44	3082
25. Pollux W.	106 16 28	2808	107 50 45	2823	109 24 43	2838	110 58 22	2852
Saturn W.	88 3 5	2772	89 38 7	2787	91 12 52	2801	92 47 18	2814
Regulus W.	69 22 39	2800	70 57 7	2814	72 31 16	2828	74 5 7	2843
Antares E.	30 33 16	2801	28 58 49	2816	27 24 42	2830	25 50 53	2844
Venus E.	46 44 1	3166	45 17 11	3188	43 50 48	3212	42 24 53	3235
Sun E.	88 25 38	3167	86 58 49	3183	85 32 19	3199	84 6 8	3214
26. Saturn W.	100 35 12	2877	102 8 0	2890	103 40 32	2901	105 12 50	2911
Regulus W.	81 50 1	2906	83 22 13	2918	84 54 9	2928	86 25 52	2939
Spica W.	27 52 23	2919	29 24 18	2929	30 56 0	2939	32 27 29	2949
Venus E.	35 22 17	3360	33 59 15	3389	32 36 46	3418	31 14 50	3450
Sun E.	76 59 28	3282	75 34 56	3294	74 10 38	3307	72 46 34	3319
27. Saturn W.	112 51 11	2958	114 22 17	2966	115 53 13	2974	117 23 59	2981
Regulus W.	94 1 14	2986	95 31 44	2994	97 2 4	3002	98 32 14	3010
Spica W.	40 1 58	2993	41 32 20	3001	43 2 31	3008	44 32 34	3015
Venus E.	24 35 6	3660	23 17 36	3718	22 1 8	3786	20 45 51	3866
Sun E.	65 49 25	3370	64 26 34	3378	63 3 52	3387	61 41 21	3394
28. Regulus W.	106 0 57	3041	107 30 19	3045	108 59 36	3051	110 28 46	3055
Spica W.	52 0 44	3045	53 30 1	3050	54 59 12	3055	56 28 17	3059
Sun E.	54 50 50	3429	53 29 6	3434	52 7 28	3440	50 45 57	3444
29. Spica W.	63 52 35	3074	65 21 16	3077	66 49 54	3078	68 18 30	3080
Sun E.	43 59 28	3462	42 38 22	3465	41 17 19	3467	39 56 18	3470
30. Spica W.	75 41 7	3083	77 9 37	3084	78 38 6	3083	80 6 37	3083
Antares W.	29 47 25	3082	31 15 57	3082	32 44 29	3081	34 13 2	3081
Sun E.	33 11 40	3474	31 50 47	3474	30 29 54	3475	29 9 2	3475

CONFIGURATIONS OF THE SATELLITES OF JUPITER,
At 10^h, MEAN TIME.

Day of the Month.	West.	East.
1		2. ○ 1. 3. 4.
2		.2 3. ○ 4.
3	3.	1. ○ .2 4.
4	.3	○ .1 2. 4.
5	2. 3.	○ 4.
6	4.	.2 ○ 1. 3.
7	4. 1.	○ 2. 3.
8	4. 2.	○ 1. 3.
9	4. .2 .1	○ ○ 3.
10	.4 3.	○ .2 ○ 1.
11	.4 .3	○ .1 2.
12	.4 2. 3 1.	○
13	.4 .2	○ .1 2.
14	.1	○ .4 .2 .3
15	2. ○	○ 1. 3.
16	.2 .1	○ 3. 4.
17	3.	○ 1. 2. 4.
18	.1 ● .3	○ 2. 4.
19	.3 2. 1.	○ 4.
20	.2	○ .1 4.
21	.1	○ .2 4. 3.
22	.4	○ 2. 1. 3.
23	.4 .1	○ 3.
24	4. 3.	○ 1. ● 2.
25	4. 3.	○ 2.
26	.4 .3 2. 1.	○
27	.4 .2	○ .1 ● 3.
28	.4 1.	○ .2 .3
29	.4	○ 2. 1. 3.
30	.2 .1 4.	○ 3.
31	3.	○ 1. 4. ● 2.

This Table represents, at 10^h after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is *on the disc of Jupiter*, and a black circle (●) that it is either *behind the disc*, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h .691841. Days.	From Mean Noon of January 1.	
	At Mean Midnight,						Day of the Year.	Fraction of the Year.*
	Logarithm of							
	A	B	C	D				
1	-0 ^h .5586	+1 ^m .3024	+9 ^s .2293	-0 ^h .8802	5 ^h 16 ^m 42 ^s .08	284	0	0000
2	0 ^h .5961	1 ^m .3008	9 ^s .2390	0 ^h .8805	5 12 46 ^s .17	285	1	0027
3	0 ^h .6306	1 ^m .2990	9 ^s .2485	0 ^h .8807	5 8 50 ^s .26	286	2	0055
4	-0 ^h .6624	+1 ^m .2972	+9 ^s .2577	-0 ^h .8810	5 4 54 ^s .35	287	3	0082
5	0 ^h .6918	1 ^m .2951	9 ^s .2667	0 ^h .8813	5 0 58 ^s .43	288	4	0110
6	0 ^h .7193	1 ^m .2929	9 ^s .2755	0 ^h .8817	4 57 2 ^s .52	289	5	0137
7	-0 ^h .7450	+1 ^m .2906	+9 ^s .2841	-0 ^h .8821	4 53 6 ^s .61	290	6	0164
8	0 ^h .7692	1 ^m .2882	9 ^s .2925	0 ^h .8825	4 49 10 ^s .70	291	7	0192
9	0 ^h .7919	1 ^m .2855	9 ^s .3006	0 ^h .8830	4 45 14 ^s .78	292	8	0219
10	-0 ^h .8134	+1 ^m .2827	+9 ^s .3086	-0 ^h .8835	4 41 18 ^s .87	293	9	0246
11	0 ^h .8337	1 ^m .2798	9 ^s .3164	0 ^h .8840	4 37 22 ^s .96	294	10	0274
12	0 ^h .8530	1 ^m .2767	9 ^s .3240	0 ^h .8845	4 33 27 ^s .05	295	11	0301
13	-0 ^h .8713	+1 ^m .2735	+9 ^s .3314	-0 ^h .8851	4 29 31 ^s .13	296	12	0329
14	0 ^h .8888	1 ^m .2701	9 ^s .3386	0 ^h .8857	4 25 35 ^s .22	297	13	0356
15	0 ^h .9054	1 ^m .2665	9 ^s .3457	0 ^h .8863	4 21 39 ^s .31	298	14	0383
16	-0 ^h .9213	+1 ^m .2627	+9 ^s .3527	-0 ^h .8870	4 17 43 ^s .40	299	15	0411
17	0 ^h .9365	1 ^m .2588	9 ^s .3594	0 ^h .8876	4 13 47 ^s .49	300	16	0438
18	0 ^h .9510	1 ^m .2547	9 ^s .3660	0 ^h .8883	4 9 51 ^s .57	301	17	0465
19	-0 ^h .9650	+1 ^m .2505	+9 ^s .3725	-0 ^h .8890	4 5 55 ^s .66	302	18	0493
20	0 ^h .9783	1 ^m .2460	9 ^s .3788	0 ^h .8897	4 1 59 ^s .75	303	19	0520
21	0 ^h .9912	1 ^m .2414	9 ^s .3850	0 ^h .8905	3 58 3 ^s .84	304	20	0548
22	-1 ^h .0035	+1 ^m .2366	+9 ^s .3911	-0 ^h .8912	3 54 7 ^s .93	305	21	0575
23	1 ^h .0154	1 ^m .2315	9 ^s .3970	0 ^h .8920	3 50 12 ^s .02	306	22	0602
24	1 ^h .0268	1 ^m .2263	9 ^s .4028	0 ^h .8928	3 46 16 ^s .10	307	23	0630
25	-1 ^h .0377	+1 ^m .2209	+9 ^s .4085	-0 ^h .8936	3 42 20 ^s .19	308	24	0657
26	1 ^h .0483	1 ^m .2153	9 ^s .4140	0 ^h .8944	3 38 24 ^s .28	309	25	0684
27	1 ^h .0585	1 ^m .2095	9 ^s .4194	0 ^h .8952	3 34 28 ^s .37	310	26	0712
28	-1 ^h .0683	+1 ^m .2035	+9 ^s .4247	-0 ^h .8960	3 30 32 ^s .46	311	27	0739
29	1 ^h .0778	1 ^m .1972	9 ^s .4299	0 ^h .8969	3 26 36 ^s .55	312	28	0767
30	1 ^h .0869	1 ^m .1907	9 ^s .4349	0 ^h .8977	3 22 40 ^s .64	313	29	0794
31	1 ^h .0957	1 ^m .1840	9 ^s .4399	0 ^h .8986	3 18 44 ^s .73	314	30	0821
32	-1 ^h .1042	+1 ^m .1770	+9 ^s .4448	-0 ^h .8994	3 14 48 ^s .82	315	31	0849

• Add .0017 if Fraction be required for the time 4, see page 363.

* Add .0017 if Fraction be required for the time 4, see page 363.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Tues.	1	20 58 32.46	10.180	S. 17 9 41.9	42.96	1 8.28	13 51.00	0.323
Wed.	2	21 2 36.79	10.146	16 52 30.9	43.70	1 8.16	13 58.75	0.289
Thur.	3	21 6 40.29	10.112	16 35 2.2	44.42	1 8.05	14 5.68	0.254
Frid.	4	21 10 42.97	10.078	16 17 16.2	45.12	1 7.93	14 11.78	0.220
Sat.	5	21 14 44.82	10.043	15 59 13.4	45.80	1 7.82	14 17.06	0.186
Sun.	6	21 18 45.85	10.009	15 40 54.2	46.46	1 7.70	14 21.52	0.151
Mon.	7	21 22 46.04	9.974	15 22 19.0	47.11	1 7.59	14 25.16	0.117
Tues.	8	21 26 45.42	9.940	15 3 28.4	47.74	1 7.48	14 27.97	0.083
Wed.	9	21 30 43.98	9.906	14 44 22.6	48.35	1 7.36	14 29.96	0.050
Thur.	10	21 34 41.73	9.873	14 25 2.1	48.94	1 7.25	14 31.15	0.017
Frid.	11	21 38 38.68	9.840	14 5 27.4	49.52	1 7.14	14 31.55	0.016
Sat.	12	21 42 34.84	9.807	13 45 38.9	50.08	1 7.03	14 31.16	0.049
Sun.	13	21 46 30.21	9.775	13 25 37.0	50.62	1 6.92	14 29.98	0.081
Mon.	14	21 50 24.82	9.744	13 5 22.1	51.15	1 6.82	14 28.04	0.112
Tues.	15	21 54 18.67	9.713	12 44 54.5	51.66	1 6.71	14 25.35	0.143
Wed.	16	21 58 11.79	9.683	12 24 14.7	52.15	1 6.61	14 21.91	0.173
Thur.	17	22 2 4.18	9.653	12 3 23.2	52.63	1 6.51	14 17.76	0.203
Frid.	18	22 5 55.86	9.625	11 42 20.1	53.09	1 6.41	14 12.90	0.231
Sat.	19	22 9 46.86	9.597	11 21 6.1	53.53	1 6.31	14 7.36	0.259
Sun.	20	22 13 37.18	9.570	10 59 41.3	53.96	1 6.21	14 1.14	0.286
Mon.	21	22 17 26.85	9.543	10 38 6.3	54.38	1 6.11	13 54.28	0.313
Tues.	22	22 21 15.88	9.517	10 16 21.3	54.77	1 6.02	13 46.77	0.339
Wed.	23	22 25 4.30	9.492	9 54 26.9	55.15	1 5.93	13 38.66	0.364
Thur.	24	22 28 52.11	9.468	9 32 23.3	55.51	1 5.84	13 29.93	0.388
Frid.	25	22 32 39.34	9.444	9 10 11.0	55.86	1 5.75	13 20.64	0.411
Sat.	26	22 36 26.00	9.421	8 47 50.3	56.19	1 5.67	13 10.78	0.434
Sun.	27	22 40 12.11	9.399	8 25 21.8	56.50	1 5.59	13 0.35	0.456
Mon.	28	22 43 57.68	9.377	8 2 45.8	56.80	1 5.51	12 49.40	0.478
Tues.	29	22 47 42.73		S. 7 40 2.6		1 5.43	12 37.93	

* Mean Time of the Semidiameter passing may be found by subtracting 0^m.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Tues.	1	20 58 30.11	S. 17 9 51.8	16 15.8	13 50.93	20 44 39.18
Wed.	2	21 2 34.42	16 52 41.1	16 15.7	13 58.68	20 48 35.74
Thur.	3	21 6 37.91	16 35 12.6	16 15.5	14 5.62	20 52 32.29
Frid.	4	21 10 40.58	16 17 26.9	16 15.4	14 11.73	20 56 28.85
Sat.	5	21 14 42.43	15 59 24.3	16 15.2	14 17.02	21 0 25.41
Sun.	6	21 18 43.45	15 41 5.3	16 15.0	14 21.49	21 4 21.96
Mon.	7	21 22 43.64	15 22 30.4	16 14.8	14 25.13	21 8 18.52
Tues.	8	21 26 43.02	15 3 39.9	16 14.7	14 27.95	21 12 15.07
Wed.	9	21 30 41.58	14 44 34.3	16 14.5	14 29.95	21 16 11.63
Thur.	10	21 34 39.34	14 25 14.0	16 14.3	14 31.15	21 20 8.19
Frid.	11	21 38 36.30	14 5 39.4	16 14.1	14 31.55	21 24 4.74
Sat.	12	21 42 32.46	13 45 51.0	16 13.9	14 31.16	21 28 1.30
Sun.	13	21 46 27.85	13 25 49.2	16 13.7	14 30.00	21 31 57.85
Mon.	14	21 50 22.47	13 5 34.4	16 13.5	14 28.06	21 35 54.41
Tues.	15	21 54 16.34	12 45 6.9	16 13.3	14 25.38	21 39 50.96
Wed.	16	21 58 9.47	12 24 27.2	16 13.1	14 21.95	21 43 47.52
Thur.	17	22 2 1.88	12 3 35.7	16 12.9	14 17.81	21 47 44.07
Frid.	18	22 5 53.58	11 42 32.7	16 12.7	14 12.95	21 51 40.63
Sat.	19	22 9 44.60	11 21 18.7	16 12.5	14 7.42	21 55 37.18
Sun.	20	22 13 34.95	10 59 53.9	16 12.3	14 1.21	21 59 33.74
Mon.	21	22 17 24.64	10 38 18.9	16 12.1	13 54.35	22. 3 30.29
Tues.	22	22 21 13.70	10 16 33.9	16 11.9	13 46.85	22 7 26.85
Wed.	23	22 25 2.14	9 54 39.4	16 11.6	13 38.74	22 11 23.40
Thur.	24	22 28 49.98	9 32 35.8	16 11.4	13 30.02	22 15 19.96
Frid.	25	22 32 37.24	9 10 23.4	16 11.1	13 20.73	22 19 16.51
Sat.	26	22 36 23.93	8 48 2.7	16 10.9	13 10.87	22 23 13.06
Sun.	27	22 40 10.07	8 25 34.1	16 10.6	13 0.45	22 27 9.62
Mon.	28	22 43 55.68	8 2 57.9	16 10.4	12 49.50	22 31 6.17
Tues.	29	22 47 40.76	S. 7 40 14.7	16 10.2	12 38.03	22 35 2.73

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	312° 9' 30" 3	S. 0° 11'	9.9937391	14 44.6	14 45.5	53 59.1	54 2.3
2	313 10 22.9	N. 0° 01'	9.9938070	14 46.8	14 48.3	54 6.8	54 12.5
3	314 11 14.4	0° 15'	9.9938763	14 50.2	14 52.4	54 19.4	54 27.4
4	315 12 4.7	0° 28'	9.9939468	14 54.9	14 57.6	54 36.5	54 46.6
5	316 12 53.7	0° 41'	9.9940187	15 0.7	15 4.0	54 57.8	55 10.1
6	317 13 41.2	0° 54'	9.9940919	15 7.7	15 11.7	55 23.5	55 38.1
7	318 14 27.2	0° 65'	9.9941663	15 16.0	15 20.6	55 53.9	56 10.8
8	319 15 11.7	0° 73'	9.9942422	15 25.6	15 30.9	56 29.0	56 48.4
9	320 15 54.6	0° 80'	9.9943197	15 36.5	15 42.3	57 8.8	57 30.2
10	321 16 35.9	0° 84'	9.9943988	15 48.3	15 54.6	57 52.3	58 15.1
11	322 17 15.5	0° 84'	9.9944796	16 0.8	16 7.1	58 38.1	59 0.9
12	323 17 53.4	0° 81'	9.9945622	16 13.2	16 19.0	59 23.2	59 44.5
13	324 18 29.5	0° 76'	9.9946468	16 24.3	16 29.0	60 4.0	60 21.3
14	325 19 4.0	0° 68'	9.9947334	16 33.0	16 36.0	60 35.8	60 47.0
15	326 19 36.8	0° 57'	9.9948220	16 38.1	16 38.9	60 54.4	60 57.5
16	327 20 8.0	0° 46'	9.9949126	16 38.6	16 37.0	60 56.2	60 50.4
17	328 20 37.6	0° 33'	9.9950052	16 34.2	16 30.3	60 40.3	60 26.0
18	329 21 5.6	0° 19'	9.9950999	16 25.4	16 19.5	60 7.9	59 46.4
19	330 21 32.1	N. 0° 06'	9.9951968	16 13.0	16 5.8	59 22.4	58 56.3
20	331 21 57.0	S. 0° 05'	9.9952956	15 58.3	15 50.7	58 28.9	58 0.8
21	332 22 20.5	0° 15'	9.9953963	15 43.0	15 35.4	57 32.6	57 4.9
22	333 22 42.6	0° 23'	9.9954987	15 28.1	15 21.2	56 38.3	56 13.0
23	334 23 3.2	0° 28'	9.9956027	15 14.8	15 9.0	55 49.6	55 28.2
24	335 23 22.3	0° 30'	9.9957081	15 3.8	14 59.2	55 9.1	54 52.3
25	336 23 40.1	0° 28'	9.9958149	14 55.3	14 52.1	54 38.1	54 26.4
26	337 23 56.5	0° 24'	9.9959228	14 49.6	14 47.8	54 17.2	54 10.5
27	338 24 11.4	0° 18'	9.9960318	14 46.6	14 46.0	54 6.1	54 4.1
28	339 24 24.7	S. 0° 08'	9.9961416	14 46.1	14 46.7	54 4.3	54 6.5
29	340 24 36.4	N. 0° 03'	9.9962521	14 47.8	14 49.4	54 10.5	54 16.4

MEAN TIME.

THE MOON'S

Day of the Week.	Day of the Month.	Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
		° ' "	° ' "	° ' "	° ' "	d	h m
Tues.	1	295 23 41.0	301 18 49.0	S. 2 56 29.5	S. 2 28 32.7	28.3	23 51.9
Wed.	2	307 14 42.7	313 11 35.7	1 58 54.5	1 27 52.5	29.3	6
Thur.	3	319 9 42.1	325 9 15.3	S. 0 55 45.0	S. 0 22 51.3	0.5	0 36.1
Frid.	4	331 10 28.9	337 13 37.5	N. 0 10 27.8	N. 0 43 51.6	1.5	1 18.3
Sat.	5	343 18 55.7	349 26 39.2	1 16 58.3	1 49 25.6	2.5	1 59.4
Sun.	6	355 37 4.9	1 50 30.6	2 20 51.3	2 50 52.3	3.5	2 40.3
Mon.	7	8 7 15.4	14 27 38.3	3 19 6.3	3 45 10.7	4.5	3 22.0
Tues.	8	20 51 59.6	27 20 39.1	4 8 43.0	4 29 21.5	5.5	4 6.0
Wed.	9	33 53 55.9	40 32 7.8	4 46 44.6	5 0 32.1	6.5	4 53.3
Thur.	10	47 15 30.0	54 4 14.6	5 10 25.0	5 16 5.5	7.5	5 45.2
Frid.	11	60 58 29.1	67 58 15.5	5 17 18.7	5 13 52.7	8.5	6 42.2
Sat.	12	75 3 30.1	82 14 0.3	5 5 39.3	4 52 35.1	9.5	7 44.0
Sun.	13	89 29 26.3	96 49 19.3	4 34 43.2	4 12 11.3	10.5	8 48.5
Mon.	14	104 13 2.0	111 39 48.6	3 45 16.4	3 14 21.6	11.5	9 52.7
Tues.	15	119 8 46.1	126 38 55.4	2 39 58.1	2 2 42.6	12.5	10 53.9
Wed.	16	134 9 13.7	141 38 36.0	1 23 18.5	N. 0 42 32.5	13.5	11 50.9
Thur.	17	149 5 58.4	156 30 19.8	N. 0 1 13.3	S. 0 39 50.6	14.5	12 43.8
Frid.	18	163 50 44.2	171 6 22.6	S. 1 19 52.9	1 58 10.5	15.5	13 33.6
Sat.	19	178 16 34.3	185 20 47.9	2 34 6.5	3 7 9.2	16.5	14 21.6
Sun.	20	192 18 41.6	199 10 3.2	3 36 53.7	4 3 1.8	17.5	15 9.0
Mon.	21	205 54 49.0	212 33 4.3	4 25 20.2	4 43 41.4	18.5	15 56.8
Tues.	22	219 5 1.1	225 30 57.9	4 58 2.9	5 8 24.8	19.5	16 45.9
Wed.	23	231 51 18.4	238 6 30.6	5 14 50.3	5 17 25.7	20.5	17 36.3
Thur.	24	244 17 5.0	250 23 34.8	5 16 18.1	5 11 35.4	21.5	18 27.9
Frid.	25	256 26 34.4	262 26 38.9	5 3 27.1	4 52 3.4	22.5	19 19.9
Sat.	26	268 24 23.7	274 20 22.8	4 37 34.6	4 20 11.5	23.5	20 11.1
Sun.	27	280 15 11.0	286 9 20.7	4 0 5.5	3 37 28.5	24.5	21 0.7
Mon.	28	292 3 22.6	297 57 46.2	3 12 33.3	2 45 33.7	25.5	21 48.0
Tues.	29	303 52 58.7	309 49 25.0	S. 2 16 43.4	S. 1 46 19.3	26.5	22 33.0

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 1.				THURSDAY 3.			
0	h m s 19 51 48.07	S. 23 58 8.2	77.82	0	h m s 21 27 33.77	S. 15 58 20.8	119.76
1	19 53 53.11	23 50 21.3	78.88	1	21 29 28.26	15 46 22.2	120.43
2	19 55 57.93	23 42 27.9	79.94	2	21 31 22.57	15 34 19.6	121.09
3	19 58 2.51	23 34 28.2	80.99	3	21 33 16.70	15 22 13.0	121.74
4	20 0 6.86	23 26 22.3	82.03	4	21 35 10.65	15 10 2.5	122.38
5	20 2 10.99	23 18 10.0	83.07	5	21 37 4.42	14 57 48.2	123.02
6	20 4 14.88	23 9 51.6	84.09	6	21 38 58.02	14 45 30.1	123.64
7	20 6 18.54	23 1 27.0	85.11	7	21 40 51.44	14 33 8.2	124.26
8	20 8 21.97	22 52 56.3	86.12	8	21 42 44.70	14 20 42.6	124.87
9	20 10 25.17	22 44 19.5	87.13	9	21 44 37.79	14 8 13.4	125.47
10	20 12 28.13	22 35 36.7	88.12	10	21 46 30.71	13 55 40.5	126.06
11	20 14 30.86	22 26 48.0	89.11	11	21 48 23.47	13 43 4.2	126.64
12	20 16 33.36	22 17 53.3	90.09	12	21 50 16.07	13 30 24.3	127.21
13	20 18 35.63	22 8 52.7	91.06	13	21 52 8.52	13 17 41.0	127.78
14	20 20 37.66	21 59 46.3	92.02	14	21 54 0.82	13 4 54.3	128.33
15	20 22 39.47	21 50 34.1	92.98	15	21 55 52.97	12 52 4.3	128.88
16	20 24 41.04	21 41 16.2	93.93	16	21 57 44.97	12 39 11.0	129.42
17	20 26 42.38	21 31 52.7	94.86	17	21 59 36.83	12 26 14.4	129.96
18	20 28 43.49	21 22 32.5	95.79	18	22 1 28.55	12 13 14.6	130.48
19	20 30 44.36	21 12 48.7	96.71	19	22 3 20.14	12 0 11.7	131.00
20	20 32 45.01	21 3 8.3	97.63	20	22 5 11.59	11 47 5.7	131.50
21	20 34 45.43	20 53 22.5	98.53	21	22 7 2.91	11 33 56.6	132.00
22	20 36 45.62	20 43 31.3	99.43	22	22 8 54.10	11 20 44.6	132.49
23	20 38 45.58	S. 20 33 34.7	100.32	23	22 10 45.16	S. 11 7 29.6	132.98
WEDNESDAY 2.				FRIDAY 4.			
0	20 40 45.31	S. 20 23 32.8	101.19	0	22 12 36.11	S. 10 54 11.7	133.45
1	20 42 44.81	20 13 25.6	102.06	1	22 14 26.94	10 40 50.9	133.92
2	20 44 44.09	20 3 13.2	102.93	2	22 16 17.66	10 27 27.4	134.38
3	20 46 43.14	19 52 55.6	103.78	3	22 18 8.27	10 14 1.1	134.83
4	20 48 41.97	19 42 32.9	104.62	4	22 19 58.77	10 0 32.1	135.27
5	20 50 40.58	19 32 5.1	105.46	5	22 21 49.16	9 47 0.4	135.70
6	20 52 38.96	19 21 32.3	106.29	6	22 23 39.45	9 33 26.2	136.13
7	20 54 37.12	19 10 54.6	107.11	7	22 25 29.65	9 19 49.4	136.54
8	20 56 35.06	19 0 11.9	107.92	8	22 27 19.76	9 6 10.1	136.95
9	20 58 32.79	18 49 24.3	108.73	9	22 29 9.77	8 52 28.3	137.35
10	21 0 30.30	18 38 31.9	109.52	10	22 30 59.70	8 38 44.2	137.75
11	21 2 27.60	18 27 34.8	110.31	11	22 32 49.54	8 24 57.7	138.13
12	21 4 24.68	18 16 32.9	111.09	12	22 34 39.31	8 11 8.9	138.50
13	21 6 21.55	18 5 26.4	111.85	13	22 36 29.00	7 57 17.9	138.87
14	21 8 18.22	17 54 15.2	112.62	14	22 38 18.62	7 43 24.6	139.23
15	21 10 14.68	17 42 59.5	113.37	15	22 40 8.17	7 29 29.2	139.58
16	21 12 10.93	17 31 39.2	114.11	16	22 41 57.66	7 15 31.7	139.92
17	21 14 6.97	17 20 14.5	114.85	17	22 43 47.09	7 1 32.1	140.26
18	21 16 2.82	17 8 45.4	115.58	18	22 45 36.46	6 47 30.6	140.58
19	21 17 58.47	16 57 11.9	116.30	19	22 47 25.77	6 33 27.1	140.90
20	21 19 53.91	16 45 34.1	117.01	20	22 49 15.04	6 19 21.6	141.21
21	21 21 49.17	16 33 52.1	117.71	21	22 51 4.27	6 5 14.4	141.51
22	21 23 44.23	16 22 5.8	118.40	22	22 52 53.45	5 51 5.3	141.80
23	21 25 39.09	16 10 15.3	119.09	23	22 54 42.60	5 36 54.4	142.09
24	21 27 33.77	S. 15 58 20.8		24	22 56 31.71	S. 5 22 41.9	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
SATURDAY 5.				MONDAY 7.			
0	22 56 31.71	S. 5 22 41.9	142.36	0	0 24 33.69	N. 6 16 18.2	145.59
1	22 58 20.79	5 8 27.7	142.63	1	0 26 26.50	6 30 51.8	145.44
2	23 0 9.85	4 54 11.9	142.89	2	0 28 19.49	6 45 24.5	145.28
3	23 1 58.89	4 39 54.5	143.14	3	0 30 12.69	6 59 56.2	145.10
4	23 3 47.91	4 25 35.7	143.38	4	0 32 6.08	7 14 26.8	144.92
5	23 5 36.92	4 11 15.4	143.62	5	0 33 59.68	7 28 56.3	144.72
6	23 7 25.92	3 56 53.6	143.84	6	0 35 53.49	7 43 24.7	144.52
7	23 9 14.92	3 42 30.5	144.06	7	0 37 47.52	7 57 51.8	144.30
8	23 11 3.91	3 28 6.1	144.27	8	0 39 41.77	8 12 17.7	144.08
9	23 12 52.91	3 13 40.5	144.47	9	0 41 36.24	8 26 42.2	143.84
10	23 14 41.92	2 59 13.6	144.67	10	0 43 30.95	8 41 5.3	143.60
11	23 16 30.94	2 44 45.6	144.85	11	0 45 25.89	8 55 26.9	143.34
12	23 18 19.97	2 30 16.4	145.03	12	0 47 21.07	9 9 47.0	143.07
13	23 20 9.03	2 15 46.2	145.20	13	0 49 16.50	9 24 5.5	142.80
14	23 21 58.11	2 1 15.0	145.36	14	0 51 12.17	9 38 22.3	142.51
15	23 23 47.22	1 46 42.8	145.51	15	0 53 8.10	9 52 37.4	142.21
16	23 25 36.37	1 32 9.7	145.65	16	0 55 4.30	10 6 50.7	141.90
17	23 27 25.55	1 17 35.8	145.79	17	0 57 0.75	10 21 2.1	141.58
18	23 29 14.77	1 3 1.0	145.91	18	0 58 57.48	10 35 11.6	141.25
19	23 31 4.05	0 48 25.5	146.03	19	1 0 54.49	10 49 19.1	140.90
20	23 32 53.37	0 33 49.3	146.14	20	1 2 51.77	11 3 24.6	140.55
21	23 34 42.75	0 19 12.4	146.24	21	1 4 49.34	11 17 27.9	140.18
22	23 36 32.19	S. 0 4 34.9	146.33	22	1 6 47.20	11 31 29.0	139.81
23	23 38 21.69	N. 0 10 3.1	146.42	23	1 8 45.36	N. 11 45 27.9	139.42
SUNDAY 6.				TUESDAY 8.			
0	23 40 11.26	N. 0 24 41.6	146.49	0	1 10 43.82	N. 11 59 24.4	139.02
1	23 42 0.91	0 39 20.6	146.56	1	1 12 42.58	12 13 18.5	138.61
2	23 43 50.63	0 53 59.9	146.61	2	1 14 41.65	12 27 10.2	138.18
3	23 45 40.43	1 8 39.6	146.66	3	1 16 41.04	12 40 59.3	137.74
4	23 47 30.33	1 23 19.6	146.70	4	1 18 40.74	12 54 45.8	137.29
5	23 49 20.31	1 37 59.9	146.73	5	1 20 40.77	13 8 29.6	136.83
6	23 51 10.39	1 52 40.3	146.76	6	1 22 41.13	13 22 10.6	136.36
7	23 53 0.58	2 7 20.9	146.77	7	1 24 41.82	13 35 48.8	135.87
8	23 54 50.87	2 22 1.5	146.77	8	1 26 42.85	13 49 24.1	135.37
9	23 56 41.26	2 36 42.2	146.77	9	1 28 44.22	14 2 56.3	134.86
10	23 58 31.78	2 51 22.8	146.76	10	1 30 45.95	14 16 25.5	134.34
11	0 0 22.41	3 6 3.4	146.73	11	1 32 48.02	14 29 51.6	133.80
12	0 2 13.17	3 20 43.8	146.70	12	1 34 50.45	14 43 14.4	133.25
13	0 4 4.06	3 35 24.0	146.66	13	1 36 53.24	14 56 33.9	132.69
14	0 5 55.08	3 50 4.0	146.61	14	1 38 56.40	15 9 50.1	132.11
15	0 7 46.24	4 4 43.7	146.55	15	1 40 59.94	15 23 2.8	131.51
16	0 9 37.54	4 19 23.0	146.48	16	1 43 3.85	15 36 12.0	130.91
17	0 11 28.99	4 34 2.0	146.40	17	1 45 8.14	15 49 17.6	130.30
18	0 13 20.59	4 48 40.4	146.32	18	1 47 12.81	16 2 19.4	129.67
19	0 15 12.35	5 3 18.4	146.22	19	1 49 17.87	16 15 17.5	129.03
20	0 17 4.27	5 17 55.7	146.12	20	1 51 23.33	16 28 11.7	128.37
21	0 18 56.36	5 32 32.4	146.00	21	1 53 29.19	16 41 2.0	127.70
22	0 20 48.63	5 47 8.5	145.87	22	1 55 35.44	16 53 48.2	127.02
23	0 22 41.07	6 1 43.7	145.74	23	1 57 42.10	17 6 30.4	126.32
24	0 24 33.69	N. 6 16 18.2		24	1 59 49.17	N. 17 19 8.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
WEDNESDAY 9.				FRIDAY 11.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	1 59 49.17	N.17 19 8.3	125.60	0	3 50 29.94	N.25 32 32.6	72.44
1	2 1 56.66	17 31 42.0	124.87	1	3 53 0.11	25 39 47.3	70.91
2	2 4 4.56	17 44 11.2	124.13	2	3 55 30.75	25 46 52.8	69.37
3	2 6 12.89	17 56 36.0	123.37	3	3 58 1.85	25 53 49.0	67.81
4	2 8 21.64	18 8 56.3	122.60	4	4 0 33.41	26 0 35.9	66.23
5	2 10 30.83	18 21 11.9	121.81	5	4 3 5.43	26 7 13.4	64.64
6	2 12 40.45	18 33 22.8	121.01	6	4 5 37.90	26 13 41.2	63.03
7	2 14 50.51	18 45 28.9	120.19	7	4 8 10.82	26 19 59.4	61.40
8	2 17 1.01	18 57 30.1	119.36	8	4 10 44.19	26 26 7.9	59.76
9	2 19 11.95	19 9 26.3	118.51	9	4 13 18.00	26 32 6.5	58.10
10	2 21 23.34	19 21 17.4	117.65	10	4 15 52.24	26 37 55.1	56.43
11	2 23 35.19	19 33 3.3	116.77	11	4 18 26.91	26 43 33.7	54.74
12	2 25 47.49	19 44 43.9	115.87	12	4 21 2.01	26 49 2.2	53.03
13	2 28 0.25	19 56 19.2	114.96	13	4 23 37.53	26 54 20.4	51.31
14	2 30 13.46	20 7 49.0	114.03	14	4 26 13.46	26 59 28.3	49.57
15	2 32 27.15	20 19 13.2	113.09	15	4 28 49.79	27 4 25.8	47.82
16	2 34 41.29	20 30 31.8	112.13	16	4 31 26.53	27 9 12.8	46.05
17	2 36 55.91	20 41 44.6	111.15	17	4 34 3.65	27 13 49.1	44.27
18	2 39 11.00	20 52 51.5	110.16	18	4 36 41.16	27 18 14.8	42.48
19	2 41 26.57	21 3 52.5	109.15	19	4 39 19.05	27 22 29.7	40.67
20	2 43 42.61	21 14 47.4	108.12	20	4 41 57.31	27 26 33.7	38.84
21	2 45 59.13	21 25 36.2	107.08	21	4 44 35.93	27 30 26.8	37.01
22	2 48 16.72	21 36 18.7	106.02	22	4 47 14.91	27 34 8.8	35.16
23	2 50 33.61	N.21 46 54.9	104.95	23	4 49 54.22	N.27 37 39.8	33.29
THURSDAY 10.				SATURDAY 12.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	2 52 51.57	N.21 57 24.6	103.85	0	4 52 33.88	N.27 40 59.6	31.41
1	2 55 10.02	22 7 47.8	102.74	1	4 55 13.87	27 44 8.1	29.52
2	2 57 28.97	22 18 4.3	101.62	2	4 57 54.18	27 47 5.3	27.62
3	2 59 48.40	22 28 14.0	100.47	3	5 0 34.80	27 49 51.1	25.71
4	3 2 8.32	22 38 16.8	99.31	4	5 3 15.73	27 52 25.4	23.79
5	3 4 28.73	22 48 12.7	98.13	5	5 5 56.94	27 54 48.1	21.85
6	3 6 49.64	22 58 1.6	96.94	6	5 8 38.44	27 56 59.3	19.91
7	3 9 11.03	23 7 43.2	95.72	7	5 11 20.21	27 58 58.8	17.96
8	3 11 32.92	23 17 17.6	94.49	8	5 14 2.25	28 0 46.5	15.99
9	3 13 55.30	23 26 44.6	93.24	9	5 16 44.53	28 2 22.5	14.02
10	3 16 18.18	23 36 4.1	91.98	10	5 19 27.06	28 3 46.6	12.04
11	3 18 41.55	23 45 16.0	90.70	11	5 22 9.83	28 4 58.9	10.05
12	3 21 5.41	23 54 20.2	89.40	12	5 24 52.81	28 5 59.2	8.05
13	3 23 29.77	24 3 16.6	88.08	13	5 27 36.01	28 6 47.5	6.04
14	3 25 54.63	24 12 5.2	86.75	14	5 30 19.41	28 7 23.8	4.03
15	3 28 19.97	24 20 45.7	85.40	15	5 33 3.00	28 7 48.0	2.00
16	3 30 45.80	24 29 18.1	84.02	16	5 35 46.76	28 8 0.0	0.02
17	3 33 12.13	24 37 42.3	82.64	17	5 38 30.69	28 7 59.9	2.05
18	3 35 38.94	24 45 58.1	81.23	18	5 41 14.78	28 7 47.6	4.09
19	3 38 6.24	24 54 5.5	79.81	19	5 43 59.02	28 7 23.0	6.14
20	3 40 34.02	25 2 4.4	78.37	20	5 46 43.38	28 6 46.1	8.19
21	3 43 31.28	25 9 54.7	76.91	21	5 49 27.87	28 5 57.0	10.24
22	3 45 31.02	25 17 36.2	75.44	22	5 52 12.47	28 4 55.5	12.30
23	3 48 0.24	25 25 8.9	73.95	23	5 54 57.16	28 3 41.7	14.36
24	3 50 29.94	N.25 32 32.6		24	5 57 41.94	N.28 2 15.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 13.				TUESDAY 15.			
0	5 57 41.94	N.28 2 15.5	16.43	0	8 7 34.53	N.22 57 15.0	108.91
1	6 0 26.80	28 0 36.9	18.50	1	8 10 10.58	22 46 21.5	110.52
2	6 3 11.71	27 58 45.8	20.57	2	8 12 46.27	22 35 18.3	112.11
3	6 5 56.68	27 56 42.4	22.64	3	8 15 21.57	22 24 5.6	113.68
4	6 8 41.69	27 54 26.5	24.71	4	8 17 56.49	22 12 43.5	115.23
5	6 11 26.72	27 51 58.3	26.78	5	8 20 31.03	22 1 12.1	116.76
6	6 14 11.77	27 49 17.6	28.85	6	8 23 5.18	21 49 31.5	118.27
7	6 16 56.82	27 46 24.5	30.91	7	8 25 38.94	21 37 41.8	119.76
8	6 19 41.87	27 43 19.0	32.98	8	8 28 12.31	21 25 43.2	121.24
9	6 22 26.89	27 40 1.1	35.04	9	8 30 45.28	21 13 35.8	122.69
10	6 25 11.88	27 36 30.8	37.11	10	8 33 17.85	21 1 19.6	124.12
11	6 27 56.83	27 32 48.1	39.17	11	8 35 50.02	20 48 54.9	125.53
12	6 30 41.73	27 28 53.1	41.22	12	8 38 21.79	20 36 21.7	126.91
13	6 33 26.56	27 24 45.7	43.27	13	8 40 53.15	20 23 40.2	128.28
14	6 36 11.31	27 20 26.1	45.32	14	8 43 24.11	20 10 50.5	129.62
15	6 38 55.97	27 15 54.2	47.36	15	8 45 54.66	19 57 52.7	130.95
16	6 41 40.53	27 11 10.0	49.40	16	8 48 24.81	19 44 47.0	132.25
17	6 44 24.97	27 6 13.6	51.43	17	8 50 54.54	19 31 33.5	133.53
18	6 47 9.30	27 1 5.0	53.45	18	8 53 23.87	19 18 12.3	134.79
19	6 49 53.49	26 55 44.2	55.47	19	8 55 52.78	19 4 43.5	136.03
20	6 52 37.54	26 50 11.4	57.48	20	8 58 21.29	18 51 7.3	137.24
21	6 55 21.43	26 44 26.5	59.48	21	9 0 49.39	18 37 23.8	138.44
22	6 58 5.16	26 38 29.6	61.47	22	9 3 17.07	18 23 33.2	139.61
23	7 0 48.71	N.26 32 20.8	63.46	23	9 5 44.35	N.18 9 35.5	140.76
MONDAY 14.				WEDNESDAY 16.			
0	7 3 32.07	N.26 26 0.0	65.44	0	9 8 11.22	N.17 55 30.9	141.89
1	7 6 15.24	26 19 27.4	67.40	1	9 10 37.68	17 41 19.5	142.99
2	7 8 58.21	26 12 42.9	69.36	2	9 13 3.73	17 27 1.6	144.07
3	7 11 40.96	26 5 46.7	71.30	3	9 15 29.37	17 12 37.1	145.14
4	7 14 23.49	25 58 38.9	73.23	4	9 17 54.61	16 58 6.2	146.17
5	7 17 5.78	25 51 19.5	75.15	5	9 20 19.45	16 43 29.2	147.19
6	7 19 47.83	25 43 48.6	77.06	6	9 22 43.88	16 28 46.0	148.18
7	7 22 29.63	25 36 6.2	78.96	7	9 25 7.91	16 13 56.9	149.16
8	7 25 11.17	25 28 12.4	80.84	8	9 27 31.54	15 59 1.9	150.11
9	7 27 52.45	25 20 7.3	82.71	9	9 29 54.78	15 44 1.2	151.03
10	7 30 33.45	25 11 51.0	84.57	10	9 32 17.62	15 28 55.0	151.94
11	7 33 14.16	25 3 23.6	86.41	11	9 34 40.07	15 13 43.4	152.82
12	7 35 54.59	24 54 45.1	88.24	12	9 37 2.13	14 58 26.4	153.68
13	7 38 34.71	24 45 55.6	90.05	13	9 39 23.80	14 43 4.3	154.52
14	7 41 14.53	24 36 55.3	91.85	14	9 41 45.09	14 27 37.2	155.33
15	7 43 54.04	24 27 44.2	93.63	15	9 44 5.99	14 12 5.1	156.13
16	7 46 33.23	24 18 22.4	95.39	16	9 46 26.52	13 56 28.3	156.90
17	7 49 12.10	24 8 50.0	97.14	17	9 48 46.67	13 40 46.9	157.65
18	7 51 50.63	23 59 7.1	98.88	18	9 51 6.44	13 25 1.0	158.37
19	7 54 28.82	23 49 13.8	100.59	19	9 53 25.85	13 9 10.7	159.08
20	7 57 6.67	23 39 10.3	102.29	20	9 55 44.89	12 53 16.2	159.76
21	7 59 44.17	23 28 56.5	103.97	21	9 58 3.57	12 37 17.6	160.42
22	8 2 21.32	23 18 32.6	105.64	22	10 0 21.89	12 21 15.0	161.06
23	8 4 58.11	23 7 58.7	107.28	23	10 2 39.85	12 5 8.6	161.68
24	8 7 34.53	N.22 57 15.0		24	10 4 57.45	N.11 48 58.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 17.				SATURDAY 19.			
0	h m s	° ' "	"	0	h m s	° ' "	"
1	10 4 57.45	N. 11 48 58.5	162.28	1	11 49 35.12	S. 1 40 12.5	167.88
2	10 7 14.70	11 32 44.8	162.85	2	11 51 41.05	1 56 59.8	167.57
3	10 9 31.62	11 16 27.7	163.41	3	11 53 46.87	2 13 45.3	167.25
4	10 11 48.19	11 0 7.2	163.94	4	11 55 52.57	2 30 28.8	166.91
5	10 14 4.42	10 43 43.6	164.45	5	11 57 58.17	2 47 10.3	166.56
6	10 16 20.32	10 27 16.8	164.94	6	12 0 3.67	3 3 49.7	166.19
7	10 18 35.89	10 10 47.1	165.41	7	12 2 9.07	3 20 26.8	165.81
8	10 20 51.14	9 54 14.6	165.86	8	12 4 14.38	3 37 1.7	165.41
9	10 23 6.07	9 37 39.5	166.29	9	12 6 19.61	3 53 34.3	165.00
10	10 25 20.68	9 21 1.7	166.70	10	12 8 24.75	4 10 4.3	164.58
11	10 27 34.98	9 4 21.5	167.08	11	12 10 29.81	4 26 31.8	164.14
12	10 29 48.98	8 47 38.9	167.45	12	12 12 34.80	4 42 56.7	163.69
13	10 32 2.67	8 30 54.2	167.80	13	12 14 39.72	4 59 18.9	163.23
14	10 34 16.07	8 14 7.4	168.13	14	12 16 44.58	5 15 38.3	162.75
15	10 36 29.18	7 57 18.6	168.43	15	12 18 49.38	5 31 54.8	162.26
16	10 38 42.00	7 40 27.9	168.72	16	12 20 54.13	5 48 8.4	161.75
17	10 40 54.54	7 23 35.6	168.99	17	12 22 58.82	6 4 18.9	161.23
18	10 43 6.79	7 6 41.6	169.23	18	12 25 3.47	6 20 26.4	160.70
19	10 45 18.78	6 49 46.2	169.46	19	12 27 8.08	6 36 30.6	160.16
20	10 47 30.49	6 32 49.4	169.67	20	12 29 12.66	6 52 31.6	159.61
21	10 49 41.94	6 15 51.3	169.86	21	12 31 17.20	7 8 29.3	159.04
22	10 51 53.13	5 58 52.2	170.03	22	12 33 21.71	7 24 23.5	158.46
23	10 54 4.07	5 41 52.0	170.18	23	12 35 26.20	7 40 14.3	157.86
24	10 56 14.75	N. 5 24 50.9	170.31	24	12 37 30.67	S. 7 56 1.5	157.26
FRIDAY 18.				SUNDAY 20.			
0	10 58 25.19	N. 5 7 49.0	170.41	0	12 39 35.13	S. 8 11 45.1	156.64
1	11 0 35.39	4 50 46.5	170.51	1	12 41 39.58	8 27 25.0	156.01
2	11 2 45.35	4 33 43.4	170.58	2	12 43 44.02	8 43 1.1	155.37
3	11 4 55.09	4 16 39.9	170.64	3	12 45 48.46	8 58 33.4	154.72
4	11 7 4.60	3 59 36.0	170.68	4	12 47 52.90	9 14 1.7	154.06
5	11 9 13.88	3 42 31.9	170.70	5	12 49 57.34	9 29 26.1	153.38
6	11 11 22.95	3 25 27.7	170.70	6	12 52 1.79	9 44 46.4	152.69
7	11 13 31.82	3 8 23.4	170.69	7	12 54 6.26	10 0 2.6	151.99
8	11 15 40.47	2 51 19.3	170.66	8	12 56 10.74	10 15 14.6	151.28
9	11 17 48.93	2 34 15.3	170.61	9	12 58 15.25	10 30 22.3	150.56
10	11 19 57.18	2 17 11.6	170.54	10	13 0 19.78	10 45 25.7	149.83
11	11 22 5.25	2 0 8.4	170.46	11	13 2 24.34	11 0 24.7	149.09
12	11 24 13.13	1 43 5.6	170.36	12	13 4 28.92	11 15 19.3	148.33
13	11 26 20.83	1 26 3.4	170.24	13	13 6 33.55	11 30 9.3	147.57
14	11 28 28.36	1 9 1.9	170.11	14	13 8 38.21	11 44 54.8	146.79
15	11 30 35.72	0 52 1.3	169.96	15	13 10 42.93	11 59 35.6	146.01
16	11 32 42.92	0 35 1.5	169.79	16	13 12 47.68	12 14 11.6	145.21
17	11 34 49.95	0 18 2.7	169.61	17	13 14 52.49	12 28 42.9	144.41
18	11 36 56.83	N. 0 1 5.1	169.41	18	13 16 57.35	12 43 9.4	143.59
19	11 39 3.56	S. 0 15 51.4	169.19	19	13 19 2.27	12 57 31.0	142.76
20	11 41 10.14	0 32 46.6	168.96	20	13 21 7.25	13 11 47.6	141.93
21	11 43 16.58	0 49 40.4	168.71	21	13 23 12.29	13 25 59.2	141.08
22	11 45 22.89	1 6 32.7	168.45	22	13 25 17.40	13 40 5.7	140.23
23	11 47 29.07	1 23 23.4	168.17	23	13 27 22.58	13 54 7.1	139.36
24	11 49 35.12	S. 1 40 12.5		24	13 29 27.83	S. 14 8 3.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
MONDAY 21.				WEDNESDAY 23.			
0	13 29 27.83	S. 14 8 3.3	138.49	0	15 11 49.10	S. 23 18 29.4	86.90
1	13 31 33.16	14 21 54.3	137.60	1	15 14 0.26	23 27 10.8	85.66
2	13 33 38.56	14 35 39.9	136.71	2	15 16 11.55	23 35 44.8	84.41
3	13 35 44.05	14 49 20.2	135.81	3	15 18 22.98	23 44 11.3	83.16
4	13 37 49.62	15 2 55.1	134.89	4	15 20 34.54	23 52 30.2	81.90
5	13 39 55.28	15 16 24.5	133.97	5	15 22 46.24	24 0 41.6	80.64
6	13 42 1.03	15 29 48.3	133.04	6	15 24 58.07	24 8 45.5	79.37
7	13 44 6.87	15 43 6.6	132.10	7	15 27 10.02	24 16 41.7	78.09
8	13 46 12.81	15 56 19.3	131.15	8	15 29 22.11	24 24 30.3	76.82
9	13 48 18.85	16 9 26.2	130.20	9	15 31 34.32	24 32 11.2	75.53
10	13 50 24.98	16 22 27.4	129.23	10	15 33 46.66	24 39 44.5	74.25
11	13 52 31.22	16 35 22.8	128.26	11	15 35 59.12	24 47 10.0	72.95
12	13 54 37.56	16 48 12.4	127.28	12	15 38 11.70	24 54 27.7	71.66
13	13 56 44.01	17 0 56.1	126.29	13	15 40 24.41	25 1 37.7	70.36
14	13 58 50.57	17 13 33.9	125.29	14	15 42 37.24	25 8 39.8	69.05
15	14 0 57.24	17 26 5.7	124.28	15	15 44 50.18	25 15 34.2	67.74
16	14 3 4.03	17 38 31.4	123.27	16	15 47 3.24	25 22 20.7	66.43
17	14 5 10.93	17 50 51.0	122.24	17	15 49 16.41	25 28 59.2	65.11
18	14 7 17.94	18 3 4.5	121.21	18	15 51 29.70	25 35 29.9	63.79
19	14 9 25.08	18 15 11.8	120.17	19	15 53 43.09	25 41 52.7	62.46
20	14 11 32.33	18 27 12.9	119.12	20	15 55 56.60	25 48 7.5	61.13
21	14 13 39.71	18 39 7.7	118.07	21	15 58 10.20	25 54 14.3	59.80
22	14 15 47.21	18 50 56.1	117.00	22	16 0 23.91	26 0 13.1	58.46
23	14 17 54.84	S. 19 2 38.2	115.93	23	16 2 37.72	S. 26 6 3.9	57.12
TUESDAY 22.				THURSDAY 24.			
0	14 20 2.59	S. 19 14 13.8	114.85	0	16 4 51.63	S. 26 11 46.6	55.77
1	14 22 10.47	19 25 43.0	113.77	1	16 7 5.63	26 17 21.3	54.43
2	14 24 18.49	19 37 5.6	112.67	2	16 9 19.73	26 22 47.8	53.07
3	14 26 26.63	19 48 21.7	111.57	3	16 11 33.91	26 28 6.3	51.72
4	14 28 34.91	19 59 31.1	110.47	4	16 13 48.18	26 33 16.7	50.37
5	14 30 43.32	20 10 34.0	109.35	5	16 16 2.53	26 38 18.9	49.01
6	14 32 51.86	20 21 30.1	108.23	6	16 18 16.96	26 43 13.0	47.65
7	14 35 0.54	20 32 19.5	107.10	7	16 20 31.47	26 47 58.9	46.28
8	14 37 9.35	20 43 2.1	105.96	8	16 22 46.05	26 52 36.6	44.92
9	14 39 18.30	20 53 37.9	104.82	9	16 25 0.70	26 57 6.1	43.55
10	14 41 27.38	21 4 6.8	103.67	10	16 27 15.42	27 1 27.5	42.18
11	14 43 36.60	21 14 28.8	102.51	11	16 29 30.21	27 5 40.6	40.81
12	14 45 45.96	21 24 43.9	101.34	12	16 31 45.05	27 9 45.4	39.43
13	14 47 55.46	21 34 52.0	100.17	13	16 33 59.96	27 13 42.0	38.06
14	14 50 5.10	21 44 53.1	99.00	14	16 36 14.91	27 17 30.4	36.68
15	14 52 14.87	21 54 47.1	97.82	15	16 38 29.92	27 21 10.5	35.30
16	14 54 24.78	22 4 34.0	96.63	16	16 40 44.97	27 24 42.3	33.92
17	14 56 34.84	22 14 13.8	95.43	17	16 43 0.07	27 28 5.8	32.54
18	14 58 45.03	22 23 46.4	94.23	18	16 45 15.21	27 31 21.1	31.15
19	15 0 55.36	22 33 11.8	93.02	19	16 47 30.38	27 34 28.0	29.77
20	15 3 5.83	22 42 29.9	91.81	20	16 49 45.59	27 37 26.7	28.38
21	15 5 16.44	23 51 40.8	90.59	21	16 52 0.82	27 40 17.0	27.00
22	15 7 27.19	23 0 44.4	89.36	22	16 54 16.08	27 42 59.0	25.61
23	15 9 38.07	23 9 40.6	88.13	23	16 56 31.36	27 45 32.7	24.22
24	15 11 49.10	S. 23 18 29.4		24	16 58 46.65	S. 27 47 58.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 25.				SUNDAY 27.			
0	^h 16 ^m 58 ^s 46.65	S. 27 47 58.1	22.84	0	^h 18 ^m 46 ^s 0.12	S. 27 3 10.1	41.84
1	17 1 1.96	27 50 15.1	21.45	1	18 48 11.30	26 58 59.0	43.10
2	17 3 17.27	27 52 23.9	20.06	2	18 50 22.31	26 54 40.4	44.35
3	17 5 32.59	27 54 24.3	18.67	3	18 52 33.13	26 50 14.2	45.60
4	17 7 47.90	27 56 16.3	17.28	4	18 54 43.78	26 45 40.6	46.85
5	17 10 3.22	27 58 0.1	15.90	5	18 56 54.25	26 40 59.5	48.09
6	17 12 18.52	27 59 35.5	14.51	6	18 59 4.53	26 36 10.9	49.32
7	17 14 33.82	28 1 2.5	13.12	7	19 1 14.63	26 31 15.0	50.54
8	17 16 49.09	28 2 21.3	11.74	8	19 3 24.54	26 26 11.7	51.77
9	17 19 4.35	28 3 31.7	10.35	9	19 5 34.25	26 21 1.1	52.98
10	17 21 19.59	28 4 33.9	8.96	10	19 7 43.78	26 15 43.2	54.19
11	17 23 34.79	28 5 27.7	7.58	11	19 9 53.10	26 10 18.0	55.39
12	17 25 49.97	28 6 13.2	6.20	12	19 12 2.22	26 4 45.6	56.59
13	17 28 5.11	28 6 50.4	4.82	13	19 14 11.15	25 59 6.0	57.78
14	17 30 20.20	28 7 19.3	3.44	14	19 16 19.87	25 53 19.3	58.97
15	17 32 35.25	28 7 40.0	2.06	15	19 18 28.39	25 47 25.5	60.14
16	17 34 50.25	28 7 52.4	0.68	16	19 20 36.71	25 41 24.6	61.31
17	17 37 5.20	28 7 56.5	0.69	17	19 22 44.82	25 35 16.7	62.48
18	17 39 20.08	28 7 52.3	2.06	18	19 24 52.72	25 29 1.8	63.64
19	17 41 34.91	28 7 39.9	3.43	19	19 27 0.41	25 22 39.9	64.79
20	17 43 49.67	28 7 19.3	4.80	20	19 29 7.88	25 16 11.1	65.94
21	17 46 4.36	28 6 50.5	6.17	21	19 31 15.15	25 9 35.5	67.08
22	17 48 18.98	28 6 13.4	7.53	22	19 33 22.20	25 2 53.0	68.21
23	17 50 33.52	S. 28 5 28.2	8.90	23	19 35 29.03	S. 24 56 3.7	69.33
SATURDAY 26.				MONDAY 28.			
0	17 52 47.97	S. 28 4 34.8	10.26	0	19 37 35.64	S. 24 49 7.7	70.45
1	17 55 2.34	28 3 33.2	11.62	1	19 39 42.04	24 42 5.0	71.56
2	17 57 16.61	28 2 23.5	12.97	2	19 41 48.22	24 34 55.6	72.67
3	17 59 30.79	28 1 5.6	14.32	3	19 43 54.18	24 27 39.5	73.76
4	18 1 44.87	27 59 39.7	15.67	4	19 45 59.92	24 20 16.0	74.85
5	18 3 58.85	27 58 5.6	17.02	5	19 48 5.43	24 12 47.8	75.94
6	18 6 12.72	27 56 23.5	18.36	6	19 50 10.73	24 5 12.1	77.02
7	18 8 26.48	27 54 33.3	19.70	7	19 52 15.80	23 57 30.0	78.09
8	18 10 40.13	27 52 35.1	21.03	8	19 54 20.64	23 49 41.4	79.15
9	18 12 53.66	27 50 28.9	22.37	9	19 56 25.27	23 41 46.5	80.20
10	18 15 7.07	27 48 14.6	23.69	10	19 58 29.67	23 33 45.3	81.25
11	18 17 20.35	27 45 52.4	25.02	11	20 0 33.84	23 25 37.7	82.29
12	18 19 33.51	27 43 22.3	26.34	12	20 2 37.79	23 17 23.9	83.33
13	18 21 46.54	27 40 44.2	27.65	13	20 4 41.52	23 9 3.9	84.36
14	18 23 59.43	27 37 58.3	28.97	14	20 6 45.02	23 0 37.7	85.38
15	18 26 12.18	27 35 4.5	30.27	15	20 8 48.29	22 52 5.4	86.39
16	18 28 24.79	27 32 2.8	31.58	16	20 10 51.34	22 43 27.0	87.39
17	18 30 37.25	27 28 53.3	32.88	17	20 12 54.17	22 34 42.6	88.39
18	18 32 49.56	27 25 36.0	34.17	18	20 14 56.76	22 25 52.3	89.38
19	18 35 1.72	27 22 10.9	35.46	19	20 16 59.14	22 16 56.0	90.36
20	18 37 13.72	27 18 38.1	36.75	20	20 19 1.29	22 7 53.8	91.33
21	18 39 25.57	27 14 57.6	38.03	21	20 21 3.22	21 58 45.8	92.30
22	18 41 37.25	27 11 9.4	39.30	22	20 23 4.92	21 49 32.0	93.25
23	18 43 48.77	27 7 13.6	40.57	23	20 25 6.41	21 40 12.5	94.20
24	18 46 0.12	S. 27 3 10.1		24	20 27 7.67	S. 21 30 47.2	

MEAN TIME.

PHASES OF THE MOON.

		d	h	m
● New Moon	-	2	13	4.3
) First Quarter	-	10	7	39.9
○ Full Moon	-	16	22	41.5
☾ Last Quarter	-	24	2	21.2

		d	h
☾ Perigee	-	15	14
☾ Apogee	-	27	17

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
5	Sun W.	27 7 43	3292	28 32 4	3283	29 56 35	3276	31 21 15	3268
	α Arietis E.	52 46 26	2941	51 14 59	2935	49 43 25	2930	48 11 45	2924
	Aldebaran E.	84 39 31	2991	83 9 7	2984	81 38 34	2977	80 7 53	2971
	Jupiter E.	88 14 3	2934	86 42 27	2928	85 10 43	2921	83 38 51	2914
6	Sun W.	38 27 2	3225	39 52 42	3215	41 18 34	3206	42 44 36	3197
	α Arietis E.	40 31 34	2897	38 59 11	2891	37 26 41	2887	35 54 5	2882
	Aldebaran E.	72 32 27	2939	71 0 58	2932	69 29 20	2925	67 57 33	2920
	Jupiter E.	75 57 14	2877	74 24 26	2870	72 51 29	2862	71 18 21	2855
	Pollux E.	115 8 59	2864	113 35 54	2855	112 2 38	2846	110 29 10	2838
7	Sun W.	49 57 40	3147	51 24 53	3136	52 52 19	3125	54 19 58	3114
	α Pegasi W.	22 50 33	4594	23 53 3	4367	24 58 54	4176	26 7 43	4013
	Aldebaran E.	60 16 39	2887	58 44 4	2881	57 11 21	2875	55 38 30	2870
	Jupiter E.	63 30 7	2812	61 55 55	2804	60 21 32	2795	58 46 58	2786
	Pollux E.	102 38 59	2791	101 4 20	2782	99 29 29	2772	97 54 25	2762
8	Sun W.	61 41 39	3056	63 10 43	3043	64 40 2	3031	66 9 37	3018
	α Pegasi W.	32 26 4	3469	33 47 3	3396	35 9 24	3330	36 33 1	3270
	Mars W.	15 47 9	3055	17 16 13	3028	18 45 51	3005	20 15 58	2983
	Aldebaran E.	47 52 33	2845	46 19 4	2842	44 45 31	2839	43 11 54	2838
	Jupiter E.	50 51 6	2740	49 15 19	2731	47 39 20	2721	46 3 8	2712
	Pollux E.	89 55 38	2709	88 19 10	2697	86 42 26	2686	85 5 27	2675
	Saturn E.	107 5 9	2675	105 27 56	2664	103 50 28	2652	102 12 44	2641
	Regulus E.	113 50 57	2605	112 12 9	2592	110 33 3	2580	108 53 40	2566
9	Sun W.	73 41 32	2951	75 12 46	2937	76 44 18	2923	78 16 7	2909
	α Pegasi W.	43 46 52	3038	45 16 17	3001	46 46 29	2967	48 17 23	2934
	Mars W.	27 52 50	2891	29 25 20	2874	30 58 12	2858	32 31 25	2842
	Aldebaran E.	35 23 53	2851	33 50 31	2860	32 17 21	2873	30 44 27	2890
	Jupiter E.	37 59 3	2667	36 21 39	2658	34 44 3	2651	33 6 17	2644
	Pollux E.	76 56 33	2613	75 17 56	2601	73 39 2	2587	71 59 49	2574
	Saturn E.	94 0 5	2580	92 20 42	2567	90 41 2	2555	89 1 5	2541
10	Regulus E.	113 50 57	2605	112 12 9	2592	110 33 3	2580	108 53 40	2566
	Sun W.	85 59 53	2835	87 33 36	2819	89 7 39	2804	90 42 1	2789
	α Pegasi W.	56 1 41	2792	57 36 19	2767	59 11 30	2744	60 47 12	2720
	Mars W.	40 22 43	2761	41 58 2	2746	43 33 41	2730	45 9 41	2714
	Pollux E.	63 39 15	2507	61 58 12	2494	60 16 50	2480	58 35 9	2465
	Saturn E.	80 36 39	2473	78 54 48	2460	77 12 38	2446	75 30 8	2431
	Regulus E.	100 32 5	2497	98 50 48	2484	97 9 12	2470	95 27 16	2455
11	Sun W.	98 39 0	2711	100 15 25	2695	101 52 12	2680	103 29 19	2663
	α Pegasi W.	68 53 9	2615	70 31 44	2595	72 10 46	2577	73 50 13	2558
	Mars W.	53 15 2	2634	54 53 11	2619	56 31 40	2603	58 10 31	2587
	α Arietis W.	25 28 44	2472	27 10 36	2448	28 53 2	2425	30 36 1	2404
	Pollux E.	50 1 46	2396	48 18 6	2383	46 34 7	2369	44 49 48	2355
	Saturn E.	66 52 35	2360	65 8 2	2346	63 23 9	2331	61 37 55	2317
	Regulus E.	86 52 31	2384	85 8 33	2369	83 24 13	2354	81 39 32	2340
12	Sun W.	111 40 12	2587	113 19 25	2572	114 58 58	2558	116 38 51	2543
	α Pegasi W.	82 13 39	2474	83 55 29	2458	85 37 41	2444	87 20 13	2430
	Mars W.	66 30 7	2511	68 11 5	2496	69 52 24	2482	71 34 3	2467
	α Arietis W.	39 18 7	2311	41 3 51	2294	42 50 0	2277	44 36 33	2262
	Pollux E.	36 3 24	2292	34 17 12	2280	32 30 43	2269	30 43 58	2259

MEAN TIME.

LUNAR DISTANCES.

Day of Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
5	Sun W.	32 46 4	3559	34 11 4	3551	35 36 13	3442	37 1 32	3233
	♈ Arietis E.	46 39 57	2919	45 8 2	2913	43 35 59	2908	42 3 50	2902
	Aldebaran E.	78 37 4	2965	77 6 7	2958	75 35 2	2952	74 3 49	2945
	Jupiter E.	82 6 50	2906	80 34 39	2900	79 2 20	2893	77 29 52	2885
6	Sun W.	44 10 49	3187	45 37 14	3177	47 3 50	3167	48 30 39	3157
	♈ Arietis E.	34 21 23	2877	32 48 35	2874	31 15 43	2870	29 42 46	2868
	Aldebaran E.	66 25 39	2913	64 53 36	2906	63 21 25	2900	61 49 6	2894
	Jupiter E.	69 45 4	2846	68 11 35	2838	66 37 57	2829	65 4 7	2821
	Pollux E.	108 55 31	2829	107 21 41	2820	105 47 39	2811	104 13 25	2801
7	Sun W.	55 47 50	3103	57 15 56	3092	58 44 16	3080	60 12 50	3068
	♈ Pegasi W.	27 19 10	3872	28 32 58	3751	29 48 51	3645	31 6 37	3552
	Aldebaran E.	54 5 32	2864	52 32 27	2859	50 59 15	2854	49 25 57	2849
	Jupiter E.	57 12 12	2777	55 37 14	2768	54 2 4	2758	52 26 41	2749
	Pollux E.	96 19 7	2752	94 43 36	2741	93 7 51	2731	91 31 52	2720
8	Sun W.	67 39 27	3005	69 9 33	2992	70 39 56	2979	72 10 35	2965
	♈ Pegasi W.	37 57 48	3215	39 23 39	3166	40 50 29	3120	42 18 15	3078
	Mars W.	21 46 32	2963	23 17 31	2944	24 48 55	2926	26 20 41	2908
	Aldebaran E.	41 38 16	2837	40 4 36	2838	38 30 58	2841	36 57 23	2845
	Jupiter E.	44 26 44	2702	42 50 7	2693	41 13 18	2684	39 36 16	2675
	Pollux E.	83 28 13	2663	81 50 43	2650	80 12 56	2638	78 34 53	2626
	Saturn E.	100 34 45	2629	98 56 30	2617	97 17 58	2605	95 39 10	2593
9	Sun W.	79 48 15	2894	81 20 41	2880	82 53 26	2865	84 26 30	2850
	♈ Pegasi W.	49 48 59	2903	51 21 14	2873	52 54 7	2845	54 27 37	2818
	Mars W.	34 4 59	2826	35 38 53	2809	37 13 9	2793	38 47 46	2778
	Aldebaran E.	29 11 55	2912	27 39 51	2941	26 8 24	2978	24 37 44	3026
	Jupiter E.	31 28 22	2638	29 50 19	2634	28 12 10	2630	26 33 56	2629
	Pollux E.	70 20 19	2561	68 40 31	2548	67 0 25	2534	65 19 59	2521
	Saturn E.	87 20 49	2528	85 40 14	2515	83 59 21	2502	82 18 10	2487
	Regulus E.	107 13 58	2553	105 33 58	2539	103 53 39	2526	102 13 2	2512
10	Sun W.	92 16 44	2773	93 51 47	2757	95 27 11	2742	97 2 55	2726
	♈ Pegasi W.	62 23 25	2698	64 0 8	2676	65 37 20	2655	67 15 0	2634
	Mars W.	46 46 3	2698	48 22 46	2682	49 59 50	2666	51 37 16	2651
	Pollux E.	56 53 7	2452	55 10 47	2438	53 28 6	2424	51 45 6	2410
	Saturn E.	73 47 18	2417	72 4 8	2403	70 20 37	2389	68 36 46	2375
	Regulus E.	93 45 0	2441	92 2 24	2426	90 19 27	2412	88 36 9	2398
11	Sun W.	105 6 48	2648	106 44 38	2633	108 22 48	2617	110 1 20	2602
	♈ Pegasi W.	75 30 6	2540	77 10 24	2522	78 51 6	2506	80 32 11	2490
	Mars W.	59 49 44	2572	61 29 18	2556	63 9 13	2541	64 49 29	2525
	♈ Arietis W.	32 19 30	2384	34 3 28	2364	35 47 55	2346	37 32 48	2328
	Pollux E.	43 5 9	2344	41 20 11	2329	39 34 54	2316	37 49 18	2304
	Saturn E.	59 52 21	2302	58 6 25	2288	56 20 8	2274	54 33 31	2260
	Regulus E.	79 54 31	2325	78 9 8	2311	76 23 25	2297	74 37 21	2283
12	Sun W.	118 19 5	2529	119 59 38	2515	121 40 31	2501	123 21 43	2488
	♈ Pegasi W.	89 3 5	2417	90 46 16	2404	92 29 45	2391	94 13 32	2380
	Mars W.	73 16 3	2453	74 58 22	2439	76 41 1	2426	78 23 59	2412
	♈ Arietis W.	46 23 28	2246	48 10 47	2232	49 58 27	2218	51 46 28	2204
	Pollux E.	28 56 58	2249	27 9 44	2241	25 22 17	2234	23 34 40	2229

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.	
12	Saturn E.	52 46 33	2247	50 59 15	2233	49 11 37	2219	47 23 38	2206	
	Regulus E.	72 50 56	2268	71 4 10	2255	69 17 4	2241	67 29 38	2228	
13	SUN W.	125 3 13	2475	126 45 2	2462	128 27 9	2450	130 9 33	2438	
	Mars W.	80 7 16	2400	81 50 51	2387	83 34 44	2375	85 18 54	2364	
	α Arietis W.	53 34 50	2190	55 23 32	2178	57 12 33	2165	59 1 54	2153	
	Aldebaran W.	23 51 38	2643	25 29 34	2573	27 9 6	2512	28 50 2	2460	
	Jupiter W.	18 30 30	2368	20 14 51	2325	22 0 14	2290	23 46 28	2260	
	Saturn E.	38 18 55	2144	36 29 3	2133	34 38 54	2121	32 48 27	2111	
	Regulus E.	58 27 33	2164	56 38 12	2153	54 48 33	2141	52 58 37	2130	
	Spica E.	112 28 37	2168	110 39 21	2156	108 49 47	2145	106 59 56	2134	
14	Mars W.	94 3 43	2313	95 49 24	2305	97 35 16	2296	99 21 21	2289	
	α Arietis W.	68 12 49	2102	70 3 46	2093	71 54 56	2085	73 46 18	2077	
	Aldebaran W.	37 30 12	2286	39 16 32	2262	41 3 28	2241	42 50 54	2222	
	Jupiter W.	32 47 0	2159	34 36 30	2145	36 26 21	2132	38 16 32	2120	
	Regulus E.	43 44 58	2082	41 53 31	2074	40 1 51	2066	38 10 0	2059	
	Spica E.	97 46 41	2085	95 55 18	2077	94 3 44	2069	92 11 57	2062	
15	Mars W.	108 14 6	2262	110 1 1	2260	111 48 0	2257	113 35 3	2255	
	α Arietis W.	83 5 41	2050	84 57 57	2046	86 50 19	2044	88 42 44	2042	
	Aldebaran W.	51 54 16	2155	53 43 52	2145	55 33 42	2137	57 23 44	2131	
	Jupiter W.	47 31 13	2079	49 22 44	2074	51 14 23	2070	53 6 8	2066	
	Regulus E.	28 48 19	2033	26 55 36	2030	25 2 49	2027	23 9 57	2026	
	Spica E.	82 50 38	2036	80 58 0	2033	79 5 17	2030	77 12 30	2028	
16	α Arietis W.	98 5 13	2043	99 57 40	2046	101 50 2	2050	103 42 19	2054	
	Aldebaran W.	66 35 46	2115	68 26 22	2116	70 16 57	2117	72 7 30	2119	
	Jupiter W.	62 25 47	2063	64 17 44	2064	66 9 38	2066	68 1 29	2069	
	Pollux W.	23 24 50	2071	25 16 33	2068	27 8 22	2066	29 0 13	2066	
	Spica E.	67 48 12	2030	65 55 24	2032	64 2 40	2035	62 10 1	2039	
	Antares E.	113 40 39	2026	111 47 46	2028	109 54 56	2032	108 2 12	2035	
17	Aldebaran W.	81 19 4	2143	83 8 58	2151	84 58 40	2158	86 48 10	2167	
	Jupiter W.	77 19 2	2098	79 10 4	2106	81 0 54	2115	82 51 30	2124	
	Pollux W.	38 18 52	2084	40 10 15	2091	42 1 29	2098	43 52 31	2107	
	Saturn W.	21 44 32	2050	23 36 49	2057	25 28 54	2065	27 20 47	2074	
	Spica E.	52 48 39	2070	50 56 54	2079	49 5 22	2087	47 14 3	2097	
	Antares E.	98 40 19	2066	96 48 27	2074	94 56 47	2082	93 5 20	2092	
18	Aldebaran W.	95 51 53	2225	97 39 44	2238	99 27 14	2252	101 14 24	2268	
	Jupiter W.	92 0 41	2181	93 49 38	2194	95 38 14	2207	97 26 31	2222	
	Pollux W.	53 4 8	2159	54 53 38	2172	56 42 48	2184	58 31 40	2198	
	Saturn W.	36 36 28	2128	38 26 45	2141	40 16 41	2154	42 6 18	2168	
	Regulus W.	16 3 54	2148	17 53 40	2161	19 43 7	2174	21 32 13	2188	
	Spica E.	38 1 33	2156	36 11 58	2170	34 22 45	2184	32 33 53	2199	
	Antares E.	83 52 0	2147	82 2 13	2161	80 12 46	2174	78 23 39	2188	
	Venus E.	118 54 48	2493	117 13 25	2507	115 32 21	2519	113 51 34	2533	
19	Jupiter W.	106 22 17	2301	108 8 15	2319	109 53 47	2336	111 38 55	2354	
	Pollux W.	67 30 35	2273	69 17 14	2289	71 3 29	2306	72 49 19	2324	
	Saturn W.	51 8 54	2245	52 56 15	2260	54 43 13	2277	56 29 46	2295	
	Regulus W.	30 32 18	2265	32 19 9	2281	34 5 36	2298	35 51 38	2315	
	Spica E.	23 35 32	2285	21 49 11	2306	20 3 20	2327	18 17 59	2350	

MEAN TIME.

LUNAR DISTANCES.

Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
12 Saturn E.	45 35 20	2193	43 46 42	218	41 57 45	2168	40 8 29	2156
Regulus E.	65 41 52	2215	63 53 46	2202	62 5 21	2188	60 16 36	2176
13 Sun W.	131 52 13	2426	133 35 10	2415	135 18 23	2405	137 1 50	2396
Mars W.	87 3 21	2353	88 48 4	2342	90 33 2	2331	92 18 16	2322
α Arietis W.	60 51 32	2142	62 41 27	2131	64 31 39	2120	66 22 7	2111
Aldebaran W.	30 32 12	2416	32 15 24	2377	33 59 32	2342	35 44 30	2312
Jupiter W.	25 33 27	2234	27 21 4	2212	29 9 14	2192	30 57 53	2174
Saturn E.	30 57 45	2101	29 6 47	2091	27 15 34	2082	25 24 7	2074
Regulus E.	51 8 24	2120	49 17 55	2110	47 27 11	2100	45 36 11	2091
Spica E.	105 9 48	2123	103 19 24	2113	101 28 44	2103	99 37 50	2094
14 Mars W.	101 7 36	2282	102 54 2	2277	104 40 35	2271	106 27 17	2266
α Arietis W.	75 37 52	2071	77 29 36	2064	79 21 30	2059	81 13 32	2055
Aldebaran W.	44 38 49	2205	46 27 10	2190	48 15 52	2177	50 4 55	2165
Jupiter W.	40 7 0	2110	41 57 44	2101	43 48 42	2093	45 39 52	2086
Regulus E.	36 17 58	2053	34 25 46	2047	32 33 25	2041	30 40 55	2037
Spica E.	90 19 59	2056	88 27 52	2050	86 35 35	2044	84 43 10	2040
15 Mars W.	115 22 8	2254	117 9 15	2254	118 56 22	2255	120 43 28	2256
α Arietis W.	90 35 12	2041	92 27 43	2041	94 20 14	2041	96 12 44	2042
Aldebaran W.	59 13 56	2126	61 4 16	2122	62 54 42	2119	64 45 13	2117
Jupiter W.	54 57 59	2064	56 49 53	2062	58 41 50	2061	60 33 49	2062
Regulus E.	21 17 3	2024	19 24 6	2024	17 31 9	2025	15 38 13	2026
Spica E.	75 19 40	2027	73 26 48	2026	71 33 55	2027	69 41 3	2028
16 α Arietis W.	105 34 30	2059	107 26 33	2064	109 18 27	2070	111 10 12	2078
Aldebaran W.	73 58 1	2122	75 48 27	2126	77 38 47	2130	79 29 0	2136
Jupiter W.	69 53 15	2074	71 44 54	2079	73 36 26	2085	75 27 49	2091
Pollux W.	30 52 5	2068	32 43 54	2070	34 35 39	2073	36 27 19	2078
Spica E.	60 17 28	2044	58 25 2	2050	56 32 45	2055	54 40 37	2062
Antares E.	106 9 33	2040	104 17 1	2046	102 24 38	2051	100 32 23	2058
17 Aldebaran W.	88 37 27	2178	90 26 28	2188	92 15 14	2199	94 3 43	2212
Jupiter W.	84 41 52	2134	86 32 0	2145	88 21 51	2156	90 11 25	2168
Pollux W.	45 43 20	2116	47 33 55	2125	49 24 16	2135	51 14 21	2147
Saturn W.	29 12 27	2083	31 3 52	2094	32 55 1	2104	34 45 54	2116
Spica E.	45 23 0	2107	43 32 11	2118	41 41 40	2130	39 51 27	2143
Antares E.	91 14 8	2101	89 23 10	2112	87 32 29	2124	85 42 6	2135
18 Aldebaran W.	103 1 11	2283	104 47 35	2300	106 33 35	2317	108 19 10	2334
Jupiter W.	99 14 26	2237	101 1 58	2252	102 49 8	2268	104 35 55	2285
Pollux W.	60 20 10	2212	62 8 20	2227	63 56 8	2242	65 43 33	2257
Saturn W.	43 55 33	2182	45 44 27	2197	47 32 59	2212	49 21 8	2228
Regulus W.	23 20 59	2203	25 9 22	2217	26 57 24	2233	28 45 3	2249
Spica E.	30 45 24	2215	28 57 18	2231	27 9 37	2248	25 22 21	2266
Antares E.	76 34 54	2202	74 46 30	2217	72 58 28	2233	71 10 50	2249
Venus E.	112 11 7	2547	110 30 59	2562	108 51 12	2578	107 14 47	2594
19 Jupiter W.	113 23 36	2372	115 7 51	2391	116 51 39	2410	118 35 0	2429
Pollux W.	74 34 44	2341	76 19 44	2358	78 4 19	2376	79 48 28	2394
Saturn W.	58 15 53	2312	60 1 35	2329	61 46 52	2348	63 31 42	2365
Regulus W.	37 37 16	2333	39 22 27	2350	41 7 14	2368	42 51 34	2387
Spica E.	16 33 12	2375	14 49 2	2404	13 5 33	2439	11 22 53	2481

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.	
19	Antares E.	69 23 35	2265	67 36 44	2281	65 50 17	2298	64 4 15	2315	
	Venus E.	105 32 44	2611	103 54 4	2628	102 15 47	2646	100 37 54	2663	
20	Pollux W.	81 32 12	2412	83 15 29	2431	84 58 20	2449	86 40 45	2467	
	Saturn W.	65 16 7	2333	67 0 6	2402	68 43 38	2420	70 26 44	2438	
	Regulus W.	44 35 28	2404	46 18 57	2423	48 1 59	2442	49 44 34	2460	
	Antares E.	55 20 27	2405	53 36 59	2423	51 53 57	2442	50 11 22	2460	
	Venus E.	92 34 40	2759	90 59 18	2778	89 24 21	2798	87 49 51	2818	
	α Aquilæ E.	106 59 19	3183	105 32 49	3189	104 6 27	3196	102 40 13	3204	
	SUN E.	138 55 23	2732	137 19 26	2752	135 43 55	2772	134 8 50	2792	
21	Pollux W.	95 6 18	2561	96 46 7	2580	98 25 29	2598	100 4 27	2617	
	Saturn W.	78 55 40	2532	80 36 9	2550	82 16 13	2569	83 55 51	2587	
	Regulus W.	58 11 0	2553	59 50 59	2572	61 30 32	2591	63 9 40	2609	
	Antares E.	41 45 1	2554	40 5 3	2572	38 25 30	2591	36 46 23	2610	
	Venus E.	80 3 50	2920	78 31 56	2940	77 0 28	2960	75 29 25	2980	
	α Aquilæ E.	95 32 5	3266	94 7 14	3281	92 42 41	3298	91 18 27	3315	
	SUN E.	126 19 58	2893	124 47 30	2913	123 15 27	2933	121 43 50	2952	
22	Saturn W.	92 7 51	2676	93 45 3	2693	95 21 52	2710	96 58 19	2727	
	Regulus W.	71 19 11	2698	72 55 54	2715	74 32 14	2732	76 8 11	2749	
	Spica W.	17 24 50	2729	19 0 51	2742	20 36 35	2756	22 12 1	2769	
	Antares E.	28 36 59	2699	27 0 18	2717	25 24 1	2734	23 48 6	2750	
	Venus E.	68 0 26	3079	66 31 51	3099	65 3 40	3118	63 35 52	3137	
	α Aquilæ E.	84 23 38	3415	83 0 38	3437	81 39 3	3460	80 17 54	3484	
	SUN E.	114 11 52	3049	112 42 40	3068	111 13 51	3087	109 45 25	3104	
23	Saturn W.	104 55 10	2805	106 29 31	2819	108 3 34	2834	109 37 17	2848	
	Regulus W.	84 2 35	2827	85 36 28	2842	87 10 1	2856	88 43 16	2870	
	Spica W.	30 4 39	2839	31 38 16	2852	33 11 36	2866	34 44 38	2880	
	Venus E.	56 22 26	3227	54 56 49	3244	53 31 32	3262	52 6 36	3278	
	α Aquilæ E.	73 39 0	3613	72 20 40	3642	71 2 51	3672	69 45 34	3702	
	SUN E.	102 28 33	3189	101 2 11	3205	99 36 8	3221	98 10 24	3236	
24	Regulus W.	96 25 12	2934	97 56 48	2945	99 28 10	2957	100 59 17	2967	
	Spica W.	42 25 44	2941	43 57 11	2951	45 28 25	2962	46 59 25	2973	
	Venus E.	45 6 35	3357	43 43 29	3371	42 20 39	3386	40 58 7	3401	
	α Aquilæ E.	63 27 32	3872	62 13 44	3911	61 0 35	3950	59 48 6	3992	
	SUN E.	91 6 1	3305	89 41 55	3318	88 18 4	3330	86 54 27	3341	
25	Spica W.	54 31 25	3017	56 1 16	3024	57 30 59	3032	59 0 32	3038	
	Venus E.	34 9 27	3471	32 48 31	3485	31 27 50	3499	30 7 25	3515	
	SUN E.	79 59 28	3391	78 37 1	3400	77 14 44	3408	75 52 36	3415	
26	Spica W.	66 26 27	3065	67 55 19	3069	69 24 6	3072	70 52 50	3076	
	Antares W.	20 32 28	3064	22 1 22	3068	23 30 11	3071	24 58 56	3074	
	SUN E.	69 3 51	3445	67 42 25	3449	66 21 4	3453	64 59 47	3457	
27	Spica W.	78 15 38	3084	79 44 7	3086	81 12 34	3086	82 41 1	3085	
	Antares W.	32 21 57	3083	33 50 28	3083	35 18 58	3083	36 47 28	3083	
	SUN E.	58 14 13	3467	56 53 12	3467	55 32 11	3468	54 11 11	3468	
28	Spica W.	90 3 30	3078	91 32 6	3077	93 0 44	3074	94 29 26	3071	
	Antares W.	44 10 12	3077	45 38 50	3074	47 7 32	3072	48 36 16	3068	
	SUN E.	47 26 0	3461	46 4 52	3459	44 43 42	3455	43 22 28	3452	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
19	Antares E.	62 18 38	2333	60 33 26	2351	58 48 41	2369	57 4 21	2387
	Venus E.	99 0 25	2682	97 23 21	2701	95 46 42	2720	94 10 28	2739
20	Pollux W.	88 22 44	2486	90 4 17	2505	91 45 23	2523	93 26 4	2542
	Saturn W.	72 9 24	2457	73 51 37	2476	75 33 24	2494	77 14 45	2513
	Regulus W.	51 26 44	2479	53 8 27	2497	54 49 44	2516	56 30 35	2535
	Antares E.	48 29 13	2479	46 47 31	2498	45 6 15	2517	43 25 25	2535
	Venus E.	86 15 46	2838	84 42 8	2859	83 8 56	2879	81 36 10	2899
	α Aquilæ E.	101 14 9	3214	99 48 17	3225	98 22 38	3238	96 57 13	3252
	SUN E.	132 34 11	2812	130 59 59	2832	129 26 13	2852	127 52 52	2873
21	Pollux W.	101 42 59	2635	103 21 7	2653	104 58 50	2671	106 36 9	2689
	Saturn W.	85 35 4	2605	87 13 52	2623	88 52 16	2641	90 30 15	2658
	Regulus W.	64 48 23	2627	66 26 42	2645	68 4 36	2663	69 42 5	2680
	Antares E.	35 7 41	2628	33 29 24	2646	31 51 32	2663	30 14 3	2682
	Venus E.	73 58 47	3001	72 28 35	3020	70 58 47	3040	69 29 24	3060
	α Aquilæ E.	89 54 33	3333	88 31 0	3353	87 7 50	3373	85 45 2	3394
	SUN E.	120 12 37	2972	118 41 49	2992	117 11 26	3011	115 41 27	3030
22	Saturn W.	98 34 23	2743	100 10 6	2759	101 45 28	2775	103 20 29	2790
	Regulus W.	77 43 46	2766	79 18 59	2781	80 53 52	2797	82 28 24	2813
	Spica W.	23 47 9	2783	25 21 59	2797	26 56 31	2811	28 30 44	2825
	Antares E.	22 12 33	2768	20 37 23	2784	19 2 34	2800	17 28 6	2816
	Venus E.	62 8 27	3155	60 41 24	3174	59 14 44	3191	57 48 24	3209
	α Aquilæ E.	78 57 12	3508	77 36 57	3533	76 17 9	3559	74 57 50	3586
	SUN E.	108 17 20	3122	106 49 37	3139	105 22 15	3157	103 55 14	3173
23	Saturn W.	111 10 43	2862	112 43 51	2875	114 16 42	2887	115 49 17	2899
	Regulus W.	90 16 13	2884	91 48 52	2897	93 21 15	2910	94 53 21	2922
	Spica W.	36 17 23	2892	37 49 52	2905	39 22 4	2917	40 54 1	2928
	Venus E.	50 41 58	3294	49 17 40	3310	47 53 40	3326	46 29 59	3341
	α Aquilæ E.	68 28 49	3733	67 12 37	3766	65 57 0	3800	64 41 58	3835
	SUN E.	96 44 58	3251	95 19 49	3265	93 54 57	3279	92 30 21	3293
24	Regulus W.	102 30 12	2977	104 0 53	2986	105 31 23	2995	107 1 42	3004
	Spica W.	48 30 12	2982	50 0 47	2991	51 31 11	3001	53 1 23	3009
	Venus E.	39 35 51	3415	38 13 51	3429	36 52 8	3442	35 30 39	3457
	α Aquilæ E.	58 36 19	4036	57 25 15	4082	56 14 56	4131	55 5 24	4183
	SUN E.	85 31 3	3352	84 7 52	3363	82 44 53	3372	81 22 5	3382
25	Spica W.	60 29 57	3044	61 59 15	3051	63 28 25	3056	64 57 29	3060
	Venus E.	28 47 17	3530	27 27 26	3546	26 7 52	3564	24 48 38	3582
	SUN E.	74 30 37	3422	73 8 45	3428	71 47 0	3434	70 25 22	3440
26	Spica W.	72 21 29	3078	73 50 5	3081	75 18 38	3083	76 47 9	3084
	Antares W.	26 27 38	3077	27 56 16	3078	29 24 52	3081	30 53 25	3082
	SUN E.	63 38 35	3460	62 17 26	3462	60 56 19	3464	59 35 15	3466
27	Spica W.	84 9 29	3085	85 37 57	3084	87 6 26	3083	88 34 57	3081
	Antares W.	38 15 59	3083	39 44 30	3082	41 13 2	3080	42 41 36	3078
	SUN E.	52 50 11	3467	51 29 10	3466	50 8 8	3465	48 47 5	3463
28	Spica W.	95 58 11	3067	97 27 1	3064	98 55 55	3060	100 24 54	3056
	Antares W.	50 5 5	3064	51 33 58	3061	53 2 55	3057	54 31 57	3053
	SUN E.	42 1 10	3449	40 39 49	3445	39 18 23	3441	37 56 53	3437

CONFIGURATIONS OF THE SATELLITES OF JUPITER, At 9^h, MEAN TIME.

Day of the Month.	<i>West.</i>		<i>East.</i>	
1	3.	1. ○	2.	4.
2	3	2. ○ 1.		4.
3	1. ● 3. ●	2. ○		4.
4		1. ○	2. 3.	4.
5		○	2. 3.	4.
6	2. 1.	○	3.	4.
7		3. 2. ○	1. 4.	
8	3.	1. 4. ○	2.	
9	3. 4.	2. ○ 1.		
10	4.	2. 3. ○		● 1.
11	4.	1. ○	2. 3.	
12	4.	○	1. 2. 3.	
13	4.	2. 1. ○	3.	
14	4.	3. ○	1.	
15	3. 4.	1. ○	2.	
16	3.	○, 1.		○ 2.
17		2. 3. 1. ○	4.	
18	1. ○	○	2. 3. 4.	
19		○ 1. 2. 3. 4.		
20		2. 1. ○	3.	4.
21		2. 3. ○	1.	4.
22	3.	1. ○	2.	4.
23	3.	○ 2. 1.	4.	
24		2. 3. 1. ○	4.	
25	2. ●	4. ○ 3.		
26	1. ●	4. ○	2. 3.	
27	4.	2. 1. ○	3.	
28	4.	2. ○ 3.	1.	

This Table represents, at 9^h after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h 691841.	From Mean Noon of January 1.	
	At Mean Midnight,						Day of the Year.	Fraction of the Year.*
	Logarithm of					Days.		
A	B	C	D					
1	-1.1042	+1.1770	+9.4448	-0.8994	3 14 48.82	315	31	.0849
2	1.1124	1.1698	9.4496	0.9002	3 10 52.91	316	32	.0876
3	1.1203	1.1623	9.4542	0.9011	3 6 57.00	317	33	.0904
4	-1.1280	+1.1546	+9.4588	-0.9019	3 3 1.09	318	34	.0931
5	1.1353	1.1466	9.4632	0.9027	2 59 5.18	319	35	.0958
6	1.1424	1.1383	9.4676	0.9036	2 55 9.27	320	36	.0986
7	-1.1493	+1.1297	+9.4718	-0.9044	2 51 13.36	321	37	.1013
8	1.1559	1.1208	9.4760	0.9052	2 47 17.45	322	38	.1040
9	1.1623	1.1116	9.4802	0.9060	2 43 21.54	323	39	.1068
10	-1.1684	+1.1020	+9.4842	-0.9068	2 39 25.63	324	40	.1095
11	1.1743	1.0921	9.4881	0.9076	2 35 29.72	325	41	.1123
12	1.1800	1.0818	9.4920	0.9084	2 31 33.81	326	42	.1150
13	-1.1855	+1.0712	+9.4958	-0.9092	2 27 37.90	327	43	.1177
14	1.1908	1.0601	9.4995	0.9099	2 23 41.99	328	44	.1205
15	1.1959	1.0486	9.5032	0.9106	2 19 46.08	329	45	.1232
16	-1.2008	+1.0367	+9.5067	-0.9114	2 15 50.17	330	46	.1259
17	1.2055	1.0243	9.5103	0.9121	2 11 54.26	331	47	.1287
18	1.2101	1.0114	9.5137	0.9127	2 7 58.35	332	48	.1314
19	-1.2144	+0.9980	+9.5171	-0.9134	2 4 2.44	333	49	.1342
20	1.2186	0.9840	9.5204	0.9140	2 0 6.53	334	50	.1369
21	1.2226	0.9694	9.5237	0.9147	1 56 10.62	335	51	.1396
22	-1.2264	+0.9542	+9.5269	-0.9153	1 52 14.72	336	52	.1424
23	1.2300	0.9383	9.5301	0.9158	1 48 18.81	337	53	.1451
24	1.2335	0.9216	9.5332	0.9164	1 44 22.90	338	54	.1478
25	-1.2368	+0.9042	+9.5362	-0.9169	1 40 26.99	339	55	.1506
26	1.2400	0.8859	9.5392	0.9174	1 36 31.08	340	56	.1533
27	1.2430	0.8667	9.5421	0.9179	1 32 35.17	341	57	.1561
28	1.2459	0.8464	9.5450	0.9183	1 28 39.26	342	58	.1588
29	-1.2486	+0.8251	+9.5479	-0.9187	1 24 43.36	343	59	.1615

* Add .0017 if Fraction be required for the time 4, see page 363.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>m s</i>	<i>m s</i>	<i>s</i>
Tues.	1	22 47 42.73	9.356	S. 7 40 2.6	57.08	1 5.43	12 37.93	0.499
Wed.	2	22 51 27.27	9.336	7 17 12.8	57.34	1 5.36	12 25.95	0.519
Thur.	3	22 55 11.33	9.316	6 54 16.8	57.58	1 5.29	12 13.48	0.539
Frid.	4	22 58 54.91	9.297	6 31 14.9	57.80	1 5.22	12 0.55	0.558
Sat.	5	23 2 38.03	9.278	6 8 7.6	58.01	1 5.15	11 47.16	0.577
Sun.	6	23 6 20.71	9.260	5 44 55.4	58.20	1 5.09	11 33.31	0.594
Mon.	7	23 10 2.95	9.243	5 21 38.5	58.38	1 5.03	11 19.04	0.611
Tues.	8	23 13 44.79	9.227	4 58 17.5	58.53	1 4.97	11 4.37	0.628
Wed.	9	23 17 26.23	9.211	4 34 52.8	58.67	1 4.92	10 49.29	0.644
Thur.	10	23 21 7.29	9.196	4 11 24.7	58.79	1 4.86	10 33.84	0.658
Frid.	11	23 24 47.99	9.182	3 47 53.6	58.90	1 4.82	10 18.03	0.672
Sat.	12	23 28 28.36	9.169	3 24 19.9	59.00	1 4.77	10 1.90	0.685
Sun.	13	23 32 8.41	9.157	3 0 44.0	59.08	1 4.73	9 45.45	0.698
Mon.	14	23 35 48.17	9.145	2 37 6.2	59.14	1 4.69	9 28.69	0.710
Tues.	15	23 39 27.65	9.134	2 13 27.0	59.18	1 4.65	9 11.66	0.720
Wed.	16	23 43 6.87	9.125	1 49 46.6	59.22	1 4.62	8 54.38	0.729
Thur.	17	23 46 45.86	9.117	1 26 5.4	59.24	1 4.59	8 36.86	0.738
Frid.	18	23 50 24.66	9.109	1 2 23.7	59.24	1 4.56	8 19.16	0.745
Sat.	19	23 54 3.27	9.102	0 38 41.9	59.24	1 4.53	8 1.27	0.752
Sun.	20	23 57 41.73	9.097	S. 0 15 0.2	59.22	1 4.51	7 43.21	0.758
Mon.	21	0 1 20.05	9.092	N. 0 8 40.9	59.18	1 4.49	7 25.04	0.762
Tues.	22	0 4 58.26	9.088	0 32 21.1	59.12	1 4.48	7 6.75	0.765
Wed.	23	0 8 36.39	9.086	0 56 0.2	59.06	1 4.47	6 48.36	0.768
Thur.	24	0 12 14.46	9.084	1 19 37.7	58.98	1 4.46	6 29.92	0.770
Frid.	25	0 15 52.48	9.083	1 43 13.3	58.89	1 4.45	6 11.45	0.771
Sat.	26	0 19 30.48	9.084	2 6 46.7	58.78	1 4.45	5 52.95	0.771
Sun.	27	0 23 8.50	9.085	2 30 17.5	58.66	1 4.44	5 34.46	0.770
Mon.	28	0 26 46.53	9.087	2 53 45.4	58.52	1 4.44	5 15.99	0.768
Tues.	29	0 30 24.60	9.089	3 17 10.0	58.37	1 4.45	4 57.56	0.765
Wed.	30	0 34 2.73	9.092	3 40 30.9	58.20	1 4.46	4 39.19	0.762
Thur.	31	0 37 40.94	9.096	4 3 47.7	58.02	1 4.47	4 20.89	0.759
Frid.	32	0 41 19.24		N. 4 27 0.1		1 4.48	4 2.68	

* Mean Time of the Semidiameter passing over the Sun's lower limb.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Tues.	1	22 47 40.76	S. 7 40 14.7	16 10.2	12 38.03	22 35 2.73
Wed.	2	22 51 25.34	7 17 24.7	16 10.0	12 26.06	22 38 59.28
Thur.	3	22 55 9.43	6 54 28.5	16 9.7	12 13.59	22 42 55.84
Frid.	4	22 58 53.05	6 31 26.5	16 9.5	12 0.66	22 46 52.39
Sat.	5	23 2 36.21	6 8 19.1	16 9.2	11 47.27	22 50 48.94
Sun.	6	23 6 18.92	5 45 6.6	16 9.0	11 33.42	22 54 45.50
Mon.	7	23 10 1.21	5 21 49.6	16 8.7	11 19.16	22 58 42.05
Tues.	8	23 13 43.09	4 58 28.3	16 8.4	11 4.49	23 2 38.60
Wed.	9	23 17 24.57	4 35 3.4	16 8.1	10 49.41	23 6 35.16
Thur.	10	23 21 5.67	4 11 35.1	16 7.9	10 33.96	23 10 31.71
Frid.	11	23 24 46.42	3 48 3.7	16 7.6	10 18.15	23 14 28.27
Sat.	12	23 28 26.83	3 24 29.8	16 7.4	10 2.01	23 18 24.82
Sun.	13	23 32 6.93	3 0 53.6	16 7.1	9 45.56	23 22 21.37
Mon.	14	23 35 46.73	2 37 15.6	16 6.9	9 28.80	23 26 17.93
Tues.	15	23 39 26.25	2 13 36.1	16 6.6	9 11.77	23 30 14.48
Wed.	16	23 43 5.52	1 49 55.4	16 6.4	8 54.49	23 34 11.03
Thur.	17	23 46 44.56	1 26 13.9	16 6.1	8 36.97	23 38 7.59
Frid.	18	23 50 23.40	1 2 31.9	16 5.9	8 19.26	23 42 4.14
Sat.	19	23 54 2.06	0 38 49.8	16 5.6	8 1.37	23 46 0.69
Sun.	20	23 57 40.56	S. 0 15 7.9	16 5.3	7 43.31	23 49 57.25
Mon.	21	0 1 18.93	N. 0 8 33.6	16 5.0	7 25.13	23 53 53.80
Tues.	22	0 4 57.19	0 32 14.1	16 4.7	7 6.84	23 57 50.35
Wed.	23	0 8 35.36	0 55 53.5	16 4.4	6 48.45	0 1 46.91
Thur.	24	0 12 13.47	1 19 31.3	16 4.1	6 30.01	0 5 43.46
Frid.	25	0 15 51.54	1 43 7.2	16 3.8	6 11.53	0 9 40.01
Sat.	26	0 19 29.59	2 6 40.9	16 3.5	5 53.02	0 13 36.57
Sun.	27	0 23 7.65	2 30 12.1	16 3.3	5 34.53	0 17 33.12
Mon.	28	0 26 45.73	2 53 40.3	16 3.0	5 16.06	0 21 29.67
Tues.	29	0 30 23.85	3 17 5.2	16 2.7	4 57.62	0 25 26.23
Wed.	30	0 34 2.03	3 40 26.4	16 2.4	4 39.25	0 29 22.78
Thur.	31	0 37 40.28	4 3 43.5	16 2.2	4 20.95	0 33 19.34
Frid.	32	0 41 18.63	N. 4 26 56.3	16 1.9	4 2.74	0 37 15.89

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	340° 24' 36".4	N. 0° 03'	9.9962521	14° 47'.8	14° 49'.4	54° 10'.5	54° 16'.4
2	341° 24' 46".4	0° 16'	9.9963632	14° 51'.4	14° 53'.8	54° 23'.8	54° 32'.5
3	342° 24' 54".8	0° 29'	9.9964748	14° 56'.4	14° 59'.4	54° 42'.3	54° 53'.3
4	343° 25' 1'.3	0° 42'	9.9965867	15° 2'.7	15° 6'.1	55° 5'.2	55° 17'.7
5	344° 25' 6".0	0° 54'	9.9966990	15° 9'.7	15° 13'.4	55° 30'.9	55° 44'.5
6	345° 25' 8".7	0° 66'	9.9968117	15° 17'.3	15° 21'.2	55° 58'.6	56° 13'.0
7	346° 25' 9".4	0° 75'	9.9969249	15° 25'.2	15° 29'.3	56° 27'.7	56° 42'.6
8	347° 25' 8".0	0° 82'	9.9970384	15° 33'.4	15° 37'.6	56° 57'.7	57° 13'.0
9	348° 25' 4".4	0° 86'	9.9971522	15° 41'.9	15° 46'.1	57° 28'.6	57° 44'.2
10	349° 24' 58".6	0° 87'	9.9972666	15° 50'.4	15° 54'.7	57° 59'.9	58° 15'.7
11	350° 24' 50".7	0° 85'	9.9973816	15° 59'.0	16° 3'.2	58° 31'.3	58° 46'.6
12	351° 24' 40".5	0° 80'	9.9974973	16° 7'.2	16° 11'.1	59° 1'.4	59° 15'.5
13	352° 24' 28".1	0° 72'	9.9976138	16° 14'.6	16° 17'.8	59° 28'.5	59° 40'.1
14	353° 24' 13".4	0° 61'	9.9977311	16° 20'.5	16° 22'.6	59° 50'.0	59° 57'.9
15	354° 23' 56".4	0° 50'	9.9978495	16° 24'.1	16° 24'.8	60° 3'.3	60° 5'.9
16	355° 23' 37".3	0° 37'	9.9979689	16° 24'.7	16° 23'.8	60° 5'.6	60° 2'.0
17	356° 23' 16".0	0° 24'	9.9980894	16° 21'.9	16° 19'.2	59° 55'.2	59° 45'.2
18	357° 22' 52".6	N. 0° 11'	9.9982108	16° 15'.6	16° 11'.2	59° 32'.2	59° 16'.2
19	358° 22' 27".2	S. 0° 01'	9.9983333	16° 6'.2	16° 0'.6	58° 57'.8	58° 37'.1
20	359° 21' 59".8	0° 12'	9.9984568	15° 54'.5	15° 48'.1	58° 14'.8	57° 51'.3
21	0° 21' 30".4	0° 20'	9.9985813	15° 41'.5	15° 34'.8	57° 27'.2	57° 2'.9
22	1° 20' 59".2	0° 26'	9.9987067	15° 28'.3	15° 22'.0	56° 38'.9	56° 15'.7
23	2° 20' 26".1	0° 29'	9.9988329	15° 16'.0	15° 10'.4	55° 53'.8	55° 33'.4
24	3° 19' 51".2	0° 29'	9.9989596	15° 5'.4	15° 0'.9	55° 14'.9	54° 58'.6
25	4° 19' 14".5	0° 26'	9.9990868	14° 57'.0	14° 53'.9	54° 44'.5	54° 32'.9
26	5° 18' 36".0	0° 20'	9.9992143	14° 51'.4	14° 49'.6	54° 23'.7	54° 17'.3
27	6° 17' 55".9	S. 0° 11'	9.9993420	14° 48'.6	14° 48'.2	54° 13'.4	54° 12'.1
28	7° 17' 14".0	0° 00'	9.9994696	14° 48'.5	14° 49'.5	54° 13'.3	54° 16'.9
29	8° 16' 30".3	N. 0° 12'	9.9995971	14° 51'.1	14° 53'.3	54° 22'.9	54° 30'.9
30	9° 15' 44".7	0° 25'	9.9997244	14° 56'.1	14° 59'.3	54° 40'.9	54° 52'.7
31	10° 14' 57".3	0° 38'	9.9998512	15° 2'.9	15° 6'.9	55° 6'.0	55° 20'.6
32	11° 14' 8".0	N. 0° 51'	9.9999775	15° 11'.1	15° 15'.6	55° 36'.1	55° 52'.4

MEAN TIME.

THE MOON'S

Day of the Week.	Day of the Month.						
		Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
		^o ['] ["]	^o ['] ["]	^o ['] ["]	^o ['] ["]	^d	^h ^m
Tues.	1	303 52 58.7	309 49 25.0	S. 2 16 43.4	S. 1 46 19.3	26.5	22 33.0
Wed.	2	315 47 27.8	321 47 27.3	1 14 37.6	S. 0 41 56.6	27.5	23 16.1
Thur.	3	327 49 41.2	333 54 24.9	S. 0 8 35.9	N. 0 25 3.2	28.5	23 57.8
Frid.	4	340 1 51.5	346 12 11.3	N. 0 58 39.0	1 31 48.3	29.5	0
Sat.	5	352 25 33.2	358 42 4.2	2 4 7.1	2 35 11.1	0.7	0 39.2
Sun.	6	5 1 49.2	11 24 52.4	3 4 35.9	3 31 56.7	1.7	1 21.1
Mon.	7	17 51 16.9	24 21 4.7	3 56 50.2	4 18 53.2	2.7	2 4.8
Tues.	8	30 54 18.0	37 30 57.8	4 37 44.1	4 53 3.7	3.7	2 51.3
Wed.	9	44 11 5.3	50 54 41.1	5 4 34.0	5 12 0.3	4.7	3 41.6
Thur.	10	57 41 45.0	64 32 16.8	5 15 9.7	5 13 53.4	5.7	4 36.4
Frid.	11	71 26 14.5	78 23 34.9	5 8 6.0	4 57 45.8	6.7	5 35.5
Sat.	12	85 24 12.6	92 27 59.7	4 42 55.0	4 23 41.3	7.7	6 37.3
Sun.	13	99 34 45.6	106 44 15.9	4 0 16.9	3 32 58.9	8.7	7 39.6
Mon.	14	113 56 12.0	121 10 11.0	3 2 10.1	2 28 18.4	9.7	8 39.9
Tues.	15	128 25 45.4	135 42 23.2	1 51 56.0	N. 1 13 39.9	10.7	9 36.7
Wed.	16	142 59 27.8	150 16 19.6	N. 0 34 11.0	S. 0 5 49.6	11.7	10 30.0
Thur.	17	157 32 16.0	164 46 32.8	S. 0 45 37.1	1 24 29.4	12.7	11 20.3
Frid.	18	171 58 25.9	179 7 12.0	2 1 45.4	2 36 48.2	13.7	12 8.9
Sat.	19	186 12 11.0	193 12 47.4	3 9 4.2	3 38 6.6	14.7	12 56.7
Sun.	20	200 8 31.2	206 58 57.9	4 3 33.1	4 25 8.5	15.7	13 45.1
Mon.	21	213 43 51.3	220 23 1.8	4 42 42.2	4 56 9.9	16.7	14 34.6
Tues.	22	226 56 27.7	233 24 14.4	5 5 30.6	5 10 48.5	17.7	15 25.7
Wed.	23	239 46 34.0	246 3 44.1	5 12 9.4	5 9 42.7	18.7	16 18.1
Thur.	24	252 16 8.3	258 24 14.3	5 3 38.7	4 54 8.9	19.7	17 10.9
Frid.	25	264 28 33.1	270 29 38.7	4 41 26.0	4 25 42.8	20.7	18 3.2
Sat.	26	276 28 7.4	282 24 36.6	4 7 12.3	3 46 7.8	21.7	18 53.8
Sun.	27	288 19 44.5	294 14 9.6	3 22 42.6	2 57 10.6	22.7	19 42.0
Mon.	28	300 8 30.3	306 3 23.6	2 29 45.9	2 0 42.9	23.7	20 27.8
Tues.	29	311 59 26.2	317 57 11.9	1 30 17.0	S. 0 58 44.7	24.7	21 11.5
Wed.	30	323 57 12.9	329 59 58.5	S. 0 26 23.0	N. 0 6 29.3	25.7	21 53.6
Thur.	31	336 5 54.8	342 15 23.9	N. 0 39 32.4	1 12 24.6	26.7	22 35.3
Frid.	32	348 28 44.2	354 46 9.3	N. 1 44 43.0	N. 2 16 3.6	27.7	23 17.3

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
TUESDAY 1.				THURSDAY 3.			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	20 27 7.67	S. 21 30 47.2	95.14	0	22 0 15.23	S. 12 22 22.0	131.00
1	20 29 8.71	21 21 16.3	96.08	1	22 2 7.63	12 9 15.9	131.55
2	20 31 9.54	21 11 39.8	97.00	2	22 3 59.91	11 56 6.6	132.09
3	20 33 10.14	21 1 57.8	97.92	3	22 5 52.08	11 42 54.0	132.62
4	20 35 10.52	20 52 10.2	98.83	4	22 7 44.13	11 29 38.3	133.14
5	20 37 10.69	20 42 17.2	99.73	5	22 9 36.08	11 16 19.4	133.66
6	20 39 10.64	20 32 18.8	100.63	6	22 11 27.91	11 2 57.4	134.16
7	20 41 10.38	20 22 15.0	101.52	7	22 13 19.65	10 49 32.4	134.66
8	20 43 9.90	20 12 5.8	102.40	8	22 15 11.28	10 36 4.4	135.15
9	20 45 9.20	20 1 51.4	103.27	9	22 17 2.81	10 22 33.5	135.63
10	20 47 8.30	19 51 31.8	104.13	10	22 18 54.26	10 8 59.7	136.10
11	20 49 7.19	19 41 7.0	104.99	11	22 20 45.61	9 55 23.0	136.57
12	20 51 5.86	19 30 37.0	105.84	12	22 22 36.87	9 41 43.6	137.02
13	20 53 4.33	19 20 1.9	106.68	13	22 24 28.05	9 28 1.4	137.47
14	20 55 2.60	19 9 21.8	107.51	14	22 26 19.15	9 14 16.6	137.91
15	20 57 0.66	18 58 36.7	108.34	15	22 28 10.17	9 0 29.1	138.34
16	20 58 58.51	18 47 46.7	109.15	16	22 30 1.12	8 46 39.0	138.76
17	21 0 56.17	18 36 51.7	109.96	17	22 31 52.00	8 32 46.4	139.17
18	21 2 53.62	18 25 51.9	110.76	18	22 33 42.82	8 18 51.4	139.58
19	21 4 50.88	18 14 47.3	111.56	19	22 35 33.57	8 4 53.9	139.97
20	21 6 47.95	18 3 38.0	112.34	20	22 37 24.25	7 50 54.0	140.36
21	21 8 44.82	17 52 23.9	113.12	21	22 39 14.89	7 36 51.8	140.74
22	21 10 41.49	17 41 5.2	113.89	22	22 41 5.47	7 22 47.4	141.11
23	21 12 37.98	S. 17 29 41.8	114.65	23	22 42 56.01	S. 7 8 40.7	141.47
WEDNESDAY 2.				FRIDAY 4.			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	21 14 34.27	S. 17 18 13.9	115.40	0	22 44 46.50	S. 6 54 31.8	141.82
1	21 16 30.38	17 6 41.5	116.14	1	22 46 36.95	6 40 20.8	142.17
2	21 18 26.32	16 55 4.6	116.88	2	22 48 27.36	6 26 7.8	142.50
3	21 20 22.07	16 43 23.3	117.61	3	22 50 17.74	6 11 52.8	142.83
4	21 22 17.64	16 31 37.6	118.33	4	22 52 8.09	5 57 35.8	143.14
5	21 24 13.03	16 19 47.6	119.04	5	22 53 58.42	5 43 16.9	143.45
6	21 26 8.25	16 7 53.3	119.74	6	22 55 48.72	5 28 56.1	143.75
7	21 28 3.30	15 55 54.8	120.44	7	22 57 39.00	5 14 33.6	144.04
8	21 29 58.17	15 43 52.1	121.13	8	22 59 29.26	5 0 9.3	144.33
9	21 31 52.88	15 31 45.3	121.81	9	23 1 19.52	4 45 43.3	144.60
10	21 33 47.43	15 19 34.5	122.48	10	23 3 9.77	4 31 15.7	144.86
11	21 35 41.80	15 7 19.6	123.14	11	23 5 0.02	4 16 46.5	145.12
12	21 37 36.02	14 55 0.7	123.80	12	23 6 50.26	4 2 15.7	145.37
13	21 39 30.08	14 42 37.9	124.44	13	23 8 40.51	3 47 43.5	145.61
14	21 41 23.99	14 30 11.2	125.08	14	23 10 30.77	3 33 9.8	145.83
15	21 43 17.75	14 17 40.7	125.71	15	23 12 21.04	3 18 34.8	146.05
16	21 45 11.36	14 5 6.4	126.33	16	23 14 11.33	3 3 58.4	146.26
17	21 47 4.83	13 52 28.4	126.94	17	23 16 1.64	2 49 20.8	146.47
18	21 48 58.15	13 39 46.7	127.53	18	23 17 51.98	2 34 42.0	146.66
19	21 50 51.33	13 27 1.4	128.13	19	23 19 42.34	2 20 2.0	146.84
20	21 52 44.37	13 14 12.5	128.74	20	23 21 32.74	2 5 20.9	147.02
21	21 54 37.28	13 1 20.0	129.32	21	23 23 23.17	1 50 38.8	147.18
22	21 56 30.06	12 48 24.1	129.89	22	23 25 13.65	1 35 55.7	147.34
23	21 58 22.71	12 35 24.7	130.45	23	23 27 4.17	1 21 11.6	147.48
24	22 0 15.23	S. 12 22 22.0		24	23 28 54.74	S. 1 6 26.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 5.				MONDAY 7.			
0	^h 23 ^m 28 ^s 54.74	S. 1° 6' 26.7	147.62	0	^h 05 ^m 43 ^s 08	N. 10° 39' 23.4	142.31
1	23 30 45.36	0 51 41.0	147.75	1	1 1 41.30	10 53 37.3	141.93
2	23 32 36.04	0 36 54.4	147.87	2	1 3 39.79	11 7 48.9	141.53
3	23 34 26.78	0 22 7.2	147.97	3	1 5 38.54	11 21 58.1	141.13
4	23 36 17.59	S. 0 7 19.3	148.07	4	1 7 37.57	11 36 4.9	140.71
5	23 38 8.47	N. 0 7 29.1	148.16	5	1 9 36.88	11 50 9.2	140.28
6	23 39 59.42	0 22 18.1	148.24	6	1 11 36.48	12 4 10.9	139.84
7	23 41 50.45	0 37 7.6	148.31	7	1 13 36.35	12 18 10.0	139.38
8	23 43 41.56	0 51 57.6	148.38	8	1 15 36.52	12 32 6.3	138.91
9	23 45 32.75	1 6 47.8	148.43	9	1 17 36.99	12 45 59.8	138.43
10	23 47 24.04	1 21 38.4	148.47	10	1 19 37.75	12 59 50.4	137.94
11	23 49 15.42	1 36 29.3	148.50	11	1 21 38.82	13 13 38.1	137.43
12	23 51 6.91	1 51 20.3	148.52	12	1 23 40.20	13 27 22.7	136.91
13	23 52 58.50	2 6 11.5	148.54	13	1 25 41.89	13 41 4.2	136.38
14	23 54 50.19	2 21 2.7	148.54	14	1 27 43.89	13 54 42.5	135.84
15	23 56 42.00	2 35 54.0	148.53	15	1 29 46.22	14 8 17.6	135.28
16	23 58 33.92	2 50 45.2	148.51	16	1 31 48.86	14 21 49.3	134.71
17	0 0 25.96	3 5 36.3	148.48	17	1 33 51.84	14 35 17.5	134.12
18	0 2 18.13	3 20 27.2	148.44	18	1 35 55.14	14 48 42.3	133.52
19	0 4 10.43	3 35 17.9	148.40	19	1 37 58.79	15 2 3.4	132.91
20	0 6 2.86	3 50 8.3	148.34	20	1 40 2.77	15 15 20.9	132.29
21	0 7 55.43	4 4 58.4	148.27	21	1 42 7.09	15 28 34.7	131.65
22	0 9 48.14	4 19 48.0	148.19	22	1 44 11.76	15 41 44.6	131.00
23	0 11 41.00	N. 4 34 37.2	148.10	23	1 46 16.79	N. 15 54 50.6	130.33
SUNDAY 6.				TUESDAY 8.			
0	0 13 34.01	N. 4 49 25.8	148.00	0	1 48 22.16	N. 16 7 52.6	129.65
1	0 15 27.18	5 4 13.8	147.89	1	1 50 27.89	16 20 50.5	128.96
2	0 17 20.50	5 19 1.2	147.77	2	1 52 33.99	16 33 44.3	128.25
3	0 19 13.99	5 33 47.8	147.63	3	1 54 40.44	16 46 33.8	127.53
4	0 21 7.65	5 48 33.6	147.49	4	1 56 47.27	16 59 19.0	126.79
5	0 23 1.48	6 3 18.6	147.34	5	1 58 54.47	17 11 59.8	126.04
6	0 24 55.49	6 18 2.7	147.17	6	2 1 2.04	17 24 36.1	125.28
7	0 26 49.68	6 32 45.7	147.00	7	2 3 9.99	17 37 7.8	124.50
8	0 28 44.06	6 47 27.8	146.81	8	2 5 18.32	17 49 34.8	123.70
9	0 30 38.63	7 2 8.7	146.62	9	2 7 27.04	18 1 57.0	122.89
10	0 32 33.39	7 16 48.4	146.41	10	2 9 36.14	18 14 14.4	122.07
11	0 34 28.36	7 31 26.9	146.19	11	2 11 45.63	18 26 26.9	121.23
12	0 36 23.53	7 46 4.1	145.96	12	2 13 55.51	18 38 34.3	120.38
13	0 38 18.91	8 0 39.9	145.72	13	2 16 5.79	18 50 36.6	119.51
14	0 40 14.50	8 15 14.3	145.47	14	2 18 16.47	19 2 33.7	118.63
15	0 42 10.31	8 29 47.2	145.21	15	2 20 27.55	19 14 25.5	117.73
16	0 44 6.34	8 44 18.4	144.93	16	2 22 39.03	19 26 12.0	116.82
17	0 46 2.59	8 58 48.1	144.65	17	2 24 50.92	19 37 52.9	115.89
18	0 47 59.08	9 13 16.0	144.35	18	2 27 3.22	19 49 28.3	114.95
19	0 49 55.80	9 27 42.1	144.04	19	2 29 15.92	20 0 58.1	114.00
20	0 51 52.76	9 42 6.4	143.72	20	2 31 29.04	20 12 22.1	113.03
21	0 53 49.97	9 56 28.7	143.38	21	2 33 42.57	20 23 40.3	112.04
22	0 55 47.42	10 10 49.0	143.04	22	2 35 56.52	20 34 52.6	111.04
23	0 57 45.12	10 25 7.3	142.68	23	2 38 10.89	20 45 58.8	110.02
24	0 59 43.08	N. 10 39 23.4		24	2 40 25.67	N. 20 56 59.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 9.				FRIDAY 11.			
0	^h 2 ^m 40 ^s 25.67	N. 20 56 59.0	108.99	0	^h 4 ^m 36 ^s 25.02	N. 27 15 26.4	41.66
1	2 42 40.88	21 7 53.0	107.95	1	4 38 59.25	27 19 36.4	39.93
2	2 44 56.50	21 18 40.7	106.88	2	4 41 33.79	27 23 36.0	38.18
3	2 47 12.56	21 29 22.0	105.80	3	4 44 8.61	27 27 25.1	36.41
4	2 49 29.03	21 39 56.9	104.71	4	4 46 43.72	27 31 3.6	34.64
5	2 51 45.94	21 50 25.1	103.60	5	4 49 19.11	27 34 31.5	32.86
6	2 54 3.27	22 0 46.7	102.47	6	4 51 54.77	27 37 48.7	31.07
7	2 56 21.02	22 11 1.6	101.33	7	4 54 30.69	27 40 55.2	29.27
8	2 58 39.21	22 21 9.6	100.18	8	4 57 6.87	27 43 50.8	27.46
9	3 0 57.82	22 31 10.7	99.00	9	4 59 43.29	27 46 35.6	25.64
10	3 3 16.86	22 41 4.8	97.81	10	5 2 19.95	27 49 9.5	23.82
11	3 5 36.34	22 50 51.7	96.61	11	5 4 56.84	27 51 32.5	21.98
12	3 7 56.24	23 0 31.4	95.39	12	5 7 33.95	27 53 44.4	20.14
13	3 10 16.57	23 10 3.8	94.16	13	5 10 11.28	27 55 45.2	18.28
14	3 12 37.33	23 19 28.8	92.91	14	5 12 48.81	27 57 35.0	16.42
15	3 14 58.52	23 28 46.2	91.64	15	5 15 26.54	27 59 13.6	14.56
16	3 17 20.14	23 37 56.1	90.36	16	5 18 4.45	28 0 40.9	12.69
17	3 19 42.18	23 46 58.3	89.06	17	5 20 42.54	28 1 57.1	10.81
18	3 22 4.66	23 55 52.7	87.75	18	5 23 20.80	28 3 2.0	8.92
19	3 24 27.55	24 4 39.3	86.42	19	5 25 59.22	28 3 55.5	7.03
20	3 26 50.87	24 13 17.9	85.08	20	5 28 37.79	28 4 37.7	5.14
21	3 29 14.61	24 21 48.4	83.72	21	5 31 16.50	28 5 8.6	3.24
22	3 31 38.77	24 30 10.8	82.35	22	5 33 55.34	28 5 28.0	1.33
23	3 34 3.35	N. 24 38 24.9	80.96	23	5 36 34.30	N. 28 5 36.0	0.57
THURSDAY 10.				SATURDAY 12.			
0	3 36 28.35	N. 24 46 30.7	79.56	0	5 39 13.38	N. 28 5 32.6	2.48
1	3 38 53.76	24 54 28.1	78.14	1	5 41 52.56	28 5 17.7	4.40
2	3 41 19.59	25 2 17.0	76.71	2	5 44 31.83	28 4 51.2	6.32
3	3 43 45.83	25 9 57.3	75.26	3	5 47 11.19	28 4 13.3	8.24
4	3 46 12.47	25 17 28.9	73.80	4	5 49 50.62	28 3 23.8	10.17
5	3 48 39.52	25 24 51.7	72.32	5	5 52 30.11	28 2 22.8	12.09
6	3 51 6.97	25 32 5.7	70.83	6	5 55 9.65	28 1 10.2	14.02
7	3 53 34.82	25 39 10.7	69.33	7	5 57 49.24	27 59 46.1	15.95
8	3 56 3.06	25 46 6.7	67.81	8	6 0 28.86	27 58 10.3	17.88
9	3 58 31.69	25 52 53.6	66.27	9	6 3 8.51	27 56 23.0	19.81
10	4 1 0.71	25 59 31.2	64.72	10	6 5 48.17	27 54 24.1	21.74
11	4 3 30.11	26 5 59.6	63.16	11	6 8 27.84	27 52 13.7	23.67
12	4 5 59.89	26 12 18.6	61.59	12	6 11 7.50	27 49 51.6	25.60
13	4 8 30.05	26 18 28.1	60.00	13	6 13 47.15	27 47 18.0	27.53
14	4 11 0.58	26 24 28.1	58.39	14	6 16 26.77	27 44 32.8	29.46
15	4 13 31.47	26 30 18.5	56.78	15	6 19 6.36	27 41 36.0	31.38
16	4 16 2.72	26 35 59.2	55.15	16	6 21 45.91	27 38 27.7	33.30
17	4 18 34.33	26 41 30.1	53.50	17	6 24 25.40	27 35 7.9	35.22
18	4 21 6.28	26 46 51.2	51.85	18	6 27 4.82	27 31 36.5	37.14
19	4 23 38.58	26 52 2.3	50.18	19	6 29 44.18	27 27 53.7	39.05
20	4 26 11.22	26 57 3.4	48.50	20	6 32 23.45	27 23 59.3	40.96
21	4 28 44.19	27 1 54.5	46.81	21	6 35 2.64	27 19 53.6	42.86
22	4 31 17.48	27 6 35.4	45.11	22	6 37 41.72	27 15 36.4	44.76
23	4 33 51.09	27 11 6.0	43.39	23	6 40 20.70	27 11 7.8	46.66
24	4 36 25.02	N. 27 15 26.4		24	6 42 59.56	N. 27 6 27.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
SUNDAY 13.				TUESDAY 15.			
0	6 ^h 42 ^m 59 ^s 56	N.27 6 27.8	48.55	0	8 ^h 45 ^m 29 ^s 76	N.19 58 20.6	136.37
1	6 45 38.29	27 1 36.5	50.43	1	8 47 55.26	19 45 42.4	127.62
2	6 48 16.89	26 56 33.9	52.31	2	8 50 20.40	19 32 56.6	128.86
3	6 50 55.34	26 51 20.0	54.18	3	8 52 45.20	19 20 3.4	130.07
4	6 53 33.64	26 45 54.9	56.04	4	8 55 9.65	19 7 3.0	131.27
5	6 56 11.78	26 40 18.7	57.89	5	8 57 33.75	18 53 55.3	132.45
6	6 58 49.75	26 34 31.3	59.74	6	8 59 57.50	18 40 40.6	133.61
7	7 1 27.54	26 28 32.8	61.58	7	9 2 20.91	18 27 18.9	134.75
8	7 4 5.15	26 22 23.3	63.41	8	9 4 43.97	18 13 50.4	135.88
9	7 6 42.57	26 16 2.8	65.23	9	9 7 6.68	18 0 15.1	136.98
10	7 9 19.79	26 9 31.3	67.05	10	9 9 29.05	17 46 33.2	138.07
11	7 11 56.80	26 2 49.0	68.85	11	9 11 51.08	17 32 44.7	139.14
12	7 14 33.60	25 55 55.9	70.64	12	9 14 12.77	17 18 49.8	140.19
13	7 17 10.18	25 48 52.0	72.43	13	9 16 34.11	17 4 48.6	141.22
14	7 19 46.52	25 41 37.4	74.20	14	9 18 55.12	16 50 41.3	142.23
15	7 22 22.63	25 34 12.2	75.96	15	9 21 15.79	16 36 27.9	143.23
16	7 24 58.50	25 26 36.4	77.71	16	9 23 36.12	16 22 8.5	144.20
17	7 27 34.12	25 18 50.1	79.45	17	9 25 56.13	16 7 43.3	145.16
18	7 30 9.49	25 10 53.4	81.18	18	9 28 15.80	15 53 12.3	146.10
19	7 32 44.60	25 2 46.3	82.89	19	9 30 35.14	15 38 35.7	147.02
20	7 35 19.44	24 54 28.9	84.60	20	9 32 54.16	15 23 53.6	147.92
21	7 37 54.01	24 46 1.3	86.29	21	9 35 12.85	15 9 6.1	148.80
22	7 40 28.30	24 37 23.5	87.97	22	9 37 31.22	14 54 13.2	149.66
23	7 43 2.31	N.24 28 35.6	89.63	23	9 39 49.27	N.14 39 15.2	150.50
MONDAY 14.				WEDNESDAY 16.			
0	7 45 36.03	N.24 19 37.8	91.29	0	9 42 7.01	N.14 24 12.2	151.33
1	7 48 9.46	24 10 30.1	92.92	1	9 44 24.43	14 9 4.2	152.14
2	7 50 42.60	24 1 12.5	94.55	2	9 46 41.55	13 53 51.3	152.93
3	7 53 15.43	23 51 45.2	96.16	3	9 48 58.35	13 38 33.7	153.69
4	7 55 47.96	23 42 8.2	97.75	4	9 51 14.85	13 23 11.5	154.44
5	7 58 20.18	23 32 21.6	99.34	5	9 53 31.06	13 7 44.9	155.17
6	8 0 52.09	23 22 25.6	100.90	6	9 55 46.96	12 52 13.8	155.88
7	8 3 23.68	23 12 20.2	102.45	7	9 58 2.57	12 36 38.5	156.57
8	8 5 54.96	23 2 5.4	103.99	8	10 0 17.89	12 20 59.0	157.25
9	8 8 25.91	22 51 41.4	105.51	9	10 2 32.93	12 5 15.5	157.90
10	8 10 56.53	22 41 8.3	107.02	10	10 4 47.67	11 49 28.1	158.53
11	8 13 26.82	22 30 26.2	108.51	11	10 7 2.14	11 33 36.8	159.15
12	8 15 56.78	22 19 35.1	109.98	12	10 9 16.34	11 17 41.9	159.74
13	8 18 26.41	22 8 35.2	111.44	13	10 11 30.26	11 1 43.4	160.32
14	8 20 55.70	21 57 26.5	112.88	14	10 13 43.92	10 45 41.5	160.88
15	8 23 24.65	21 46 9.2	114.31	15	10 15 57.31	10 29 36.2	161.42
16	8 25 53.27	21 34 43.3	115.72	16	10 18 10.44	10 13 27.6	161.94
17	8 28 21.54	21 23 9.0	117.11	17	10 20 23.32	9 57 15.9	162.44
18	8 30 49.47	21 11 26.3	118.48	18	10 22 35.94	9 41 1.2	162.93
19	8 33 17.05	20 59 35.4	119.84	19	10 24 48.31	9 24 43.6	163.39
20	8 35 44.29	20 47 36.3	121.18	20	10 27 0.44	9 8 23.2	163.84
21	8 38 11.18	20 35 29.2	122.50	21	10 29 12.33	8 52 0.2	164.27
22	8 40 37.72	20 23 14.1	123.81	22	10 31 23.99	8 35 34.5	164.68
23	8 43 3.92	20 10 51.2	125.10	23	10 33 35.41	8 19 6.4	165.08
24	8 45 29.76	N.19 58 20.6		24	10 35 46.60	N. 8 2 35.9	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 17.				SATURDAY 19.			
0	^h 10 ^m 35 ^s 46.60	N. 8 2 35.9	165.43	0	^h 12 ^m 17 ^s 45.73	S. 5 21 28.7	163.15
1	10 37 57.57	7 46 3.2	165.81	1	12 19 51.36	5 37 47.6	162.71
2	10 40 8.33	7 29 28.3	166.14	2	12 21 56.98	5 54 3.9	162.26
3	10 42 18.87	7 12 51.4	166.46	3	12 24 2.60	6 10 17.5	161.79
4	10 44 29.20	6 56 12.6	166.77	4	12 26 8.24	6 26 28.3	161.31
5	10 46 39.32	6 39 32.0	167.05	5	12 28 13.88	6 42 36.2	160.82
6	10 48 49.25	6 22 49.6	167.31	6	12 30 19.53	6 58 41.1	160.31
7	10 50 58.98	6 6 5.7	167.56	7	12 32 25.20	7 14 43.0	159.78
8	10 53 8.52	5 49 20.3	167.79	8	12 34 30.90	7 30 41.7	159.24
9	10 55 17.87	5 32 33.5	168.00	9	12 36 36.62	7 46 37.2	158.69
10	10 57 27.04	5 15 45.5	168.20	10	12 38 42.37	8 2 29.4	158.13
11	10 59 36.02	4 58 56.3	168.37	11	12 40 48.15	8 18 18.2	157.55
12	11 1 44.84	4 42 6.0	168.53	12	12 42 53.97	8 34 3.5	156.95
13	11 3 53.49	4 25 14.8	168.67	13	12 44 59.83	8 49 45.2	156.34
14	11 6 1.98	4 8 22.7	168.79	14	12 47 5.74	9 5 23.3	155.72
15	11 8 10.30	3 51 29.9	168.90	15	12 49 11.69	9 20 57.7	155.09
16	11 10 18.48	3 34 36.5	168.99	16	12 51 17.70	9 36 28.3	154.44
17	11 12 26.50	3 17 42.5	169.06	17	12 53 23.76	9 51 55.0	153.78
18	11 14 34.38	3 0 48.1	169.12	18	12 55 29.88	10 7 17.7	153.11
19	11 16 42.11	2 43 53.4	169.15	19	12 57 36.06	10 22 36.4	152.43
20	11 18 49.71	2 26 58.5	169.17	20	12 59 42.31	10 37 51.0	151.73
21	11 20 57.18	2 10 3.4	169.18	21	13 1 48.63	10 53 1.4	151.02
22	11 23 4.52	1 53 8.3	169.16	22	13 3 55.02	11 8 7.5	150.29
23	11 25 11.73	N. 1 36 13.3	169.13	23	13 6 1.48	S. 11 23 9.3	149.56
FRIDAY 18.				SUNDAY 20.			
0	11 27 18.83	N. 1 19 18.5	169.09	0	13 8 8.02	S. 11 38 6.7	148.81
1	11 29 25.81	1 2 24.0	169.02	1	13 10 14.64	11 52 59.6	148.05
2	11 31 32.69	0 45 29.8	168.94	2	13 12 21.35	12 7 47.9	147.28
3	11 33 39.46	0 28 36.1	168.85	3	13 14 28.14	12 22 31.6	146.49
4	11 35 46.14	N. 0 11 43.0	168.73	4	13 16 35.02	12 37 10.6	145.69
5	11 37 52.72	S. 0 5 9.4	168.60	5	13 18 41.99	12 51 44.8	144.88
6	11 39 59.20	0 22 1.1	168.46	6	13 20 49.07	13 6 14.1	144.06
7	11 42 5.61	0 38 51.9	168.29	7	13 22 56.24	13 20 38.5	143.23
8	11 44 11.93	0 55 41.7	168.12	8	13 25 3.51	13 34 57.9	142.38
9	11 46 18.17	1 12 30.4	167.92	9	13 27 10.88	13 49 12.2	141.53
10	11 48 24.35	1 29 18.0	167.71	10	13 29 18.36	14 3 21.4	140.66
11	11 50 30.45	1 46 4.3	167.49	11	13 31 25.95	14 17 25.4	139.78
12	11 52 36.49	2 2 49.2	167.24	12	13 33 33.65	14 31 24.1	138.88
13	11 54 42.48	2 19 32.7	166.98	13	13 35 41.47	14 45 17.4	137.98
14	11 56 48.41	2 36 14.6	166.71	14	13 37 49.40	14 59 5.4	137.07
15	11 58 54.29	2 52 54.9	166.42	15	13 39 57.45	15 12 47.8	136.14
16	12 1 0.13	3 9 33.5	166.12	16	13 42 5.62	15 26 24.7	135.21
17	12 3 5.93	3 26 10.2	165.80	17	13 44 13.92	15 39 56.0	134.26
18	12 5 11.69	3 42 45.0	165.46	18	13 46 22.34	15 53 21.6	133.30
19	12 7 17.42	3 59 17.8	165.12	19	13 48 30.88	16 6 41.4	132.34
20	12 9 23.12	4 15 48.5	164.75	20	13 50 39.56	16 19 55.4	131.36
21	12 11 28.80	4 32 17.1	164.37	21	13 52 48.36	16 33 3.6	130.37
22	12 13 34.46	4 48 43.4	163.98	22	13 54 57.29	16 46 5.9	129.37
23	12 15 40.10	5 5 7.3	163.57	23	13 57 6.36	16 59 2.1	128.36
24	12 17 45.73	S. 5 21 28.7		24	13 59 15.56	S. 17 11 52.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.			Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.			Declination.	Diff. Dec. for 10 ^m .		
MONDAY 21.						WEDNESDAY 23.							
	h	m	s	°	'		h	m	s	°	'		
0	13	59	15.56	S. 17	11 52.3	127.34	0	15	45	25.47	S. 25	11 55.0	68.63
1	14	1	24.90	17	24 36.4	126.31	1	15	47	41.41	25	18 46.8	67.25
2	14	3	34.38	17	37 14.3	125.27	2	15	49	57.45	25	25 30.3	65.87
3	14	5	44.00	17	49 46.0	124.23	3	15	52	13.58	25	32 5.6	64.48
4	14	7	53.76	18	2 11.4	123.17	4	15	54	29.82	25	38 32.5	63.10
5	14	10	3.66	18	14 30.4	122.10	5	15	56	46.14	25	44 51.1	61.70
6	14	12	13.70	18	26 43.0	121.02	6	15	59	2.56	25	51 1.4	60.31
7	14	14	23.89	18	38 49.1	119.93	7	16	1	19.06	25	57 3.2	58.91
8	14	16	34.22	18	50 48.7	118.83	8	16	3	35.64	26	2 56.7	57.51
9	14	18	44.69	19	2 41.8	117.73	9	16	5	52.30	26	8 41.8	56.10
10	14	20	55.31	19	14 28.2	116.61	10	16	8	9.04	26	14 18.4	54.69
11	14	23	6.07	19	26 7.9	115.49	11	16	10	25.85	26	19 46.6	53.28
12	14	25	16.99	19	37 40.8	114.35	12	16	12	42.73	26	25 6.3	51.87
13	14	27	28.05	19	49 6.9	113.21	13	16	14	59.68	26	30 17.5	50.45
14	14	29	39.27	20	0 26.2	112.06	14	16	17	16.68	26	35 20.3	49.03
15	14	31	50.63	20	11 38.6	110.90	15	16	19	33.75	26	40 14.5	47.61
16	14	34	2.13	20	22 44.0	109.73	16	16	21	50.87	26	45 0.2	46.19
17	14	36	13.79	20	33 42.4	108.55	17	16	24	8.04	26	49 37.4	44.77
18	14	38	25.60	20	44 33.7	107.37	18	16	26	25.25	26	54 6.0	43.34
19	14	40	37.56	20	55 17.9	106.18	19	16	28	42.51	26	58 26.1	41.91
20	14	42	49.66	21	5 55.0	104.98	20	16	30	59.81	27	2 37.6	40.48
21	14	45	1.92	21	16 24.9	103.77	21	16	33	17.14	27	6 40.5	39.05
22	14	47	14.32	21	26 47.6	102.55	22	16	35	34.50	27	10 34.8	37.62
23	14	49	26.87	S. 21	37 2.9	101.33	23	16	37	51.89	S. 27	14 20.5	36.18
TUESDAY 22.						THURSDAY 24.							
0	14	51	39.57	S. 21	47 10.9	100.10	0	16	40	9.30	S. 27	17 57.7	34.75
1	14	53	52.41	21	57 11.6	98.86	1	16	42	26.73	27	21 26.2	33.32
2	14	56	5.40	22	7 4.8	97.62	2	16	44	44.17	27	24 46.2	31.88
3	14	58	18.54	22	16 50.5	96.37	3	16	47	1.62	27	27 57.5	30.45
4	15	0	31.81	22	26 28.7	95.11	4	16	49	19.08	27	31 0.2	29.01
5	15	2	45.24	22	35 59.4	93.84	5	16	51	36.54	27	33 54.3	27.57
6	15	4	58.80	22	45 22.4	92.57	6	16	53	53.99	27	36 39.7	26.14
7	15	7	12.50	22	54 37.9	91.29	7	16	56	11.44	27	39 16.6	24.70
8	15	9	26.35	23	3 45.6	90.00	8	16	58	28.87	27	41 44.9	23.27
9	15	11	40.33	23	12 45.6	88.71	9	17	0	46.28	27	44 4.5	21.84
10	15	13	54.45	23	21 37.9	87.41	10	17	3	3.68	27	46 15.6	20.40
11	15	15	8.70	23	30 22.4	86.10	11	17	5	21.04	27	48 18.0	18.97
12	15	18	23.09	23	38 59.0	84.79	12	17	7	38.38	27	50 11.9	17.54
13	15	20	37.61	23	47 27.7	83.47	13	17	9	55.68	27	51 57.2	16.11
14	15	22	52.26	23	55 48.6	82.14	14	17	12	12.94	27	53 33.9	14.68
15	15	25	7.04	24	4 1.5	80.82	15	17	14	30.16	27	55 2.0	13.26
16	15	27	21.95	24	12 6.4	79.48	16	17	16	47.33	27	56 21.6	11.83
17	15	29	36.98	24	20 3.3	78.14	17	17	19	4.45	27	57 32.6	10.41
18	15	31	52.13	24	27 52.2	76.80	18	17	21	21.51	27	58 35.1	8.99
19	15	34	7.40	24	35 33.0	75.45	19	17	23	38.50	27	59 29.0	7.57
20	15	36	22.79	24	43 5.7	74.09	20	17	25	55.43	28	0 14.4	6.15
21	15	38	38.30	24	50 30.3	72.73	21	17	28	12.29	28	0 51.4	4.73
22	15	40	53.91	24	57 46.7	71.37	22	17	30	29.08	28	1 19.8	3.32
23	15	43	9.64	25	4 55.0	70.00	23	17	32	45.78	28	1 39.7	1.91
24	15	45	25.47	S. 25	11 55.0		24	17	35	2.41	S. 28	1 51.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
FRIDAY 25.				SUNDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	17 35 2.41	S. 28 1 51.2	0.50	0	19 21 26.97	S. 25 33 3.8	61.75
1	17 37 18.94	28 1 54.2	0.90	1	19 23 35.14	25 26 53.3	62.90
2	17 39 35.38	28 1 48.8	2.30	2	19 25 43.08	25 20 35.9	64.04
3	17 41 51.73	28 1 35.0	3.70	3	19 27 50.79	25 14 11.6	65.18
4	17 44 7.97	28 1 12.8	5.09	4	19 29 58.26	25 7 40.5	66.31
5	17 46 24.10	28 0 42.2	6.48	5	19 32 5.50	25 1 2.6	67.43
6	17 48 40.13	28 0 3.3	7.87	6	19 34 12.51	24 54 18.0	68.55
7	17 50 56.04	27 59 16.0	9.26	7	19 36 19.27	24 47 26.7	69.65
8	17 53 11.84	27 58 20.4	10.64	8	19 38 25.81	24 40 28.8	70.76
9	17 55 27.51	27 57 16.6	12.02	9	19 40 32.10	24 33 24.2	71.85
10	17 57 43.06	27 56 4.4	13.39	10	19 42 38.16	24 26 13.1	72.94
11	17 59 58.48	27 54 44.0	14.76	11	19 44 43.98	24 18 55.4	74.02
12	18 2 13.76	27 53 15.4	16.13	12	19 46 49.56	24 11 31.3	75.09
13	18 4 28.91	27 51 38.6	17.49	13	19 48 54.90	24 4 0.7	76.15
14	18 6 43.91	27 49 53.6	18.85	14	19 51 0.01	23 56 23.8	77.21
15	18 8 58.77	27 48 0.5	20.20	15	19 53 4.88	23 48 40.5	78.26
16	18 11 13.49	27 45 59.2	21.55	16	19 55 9.51	23 40 50.9	79.31
17	18 13 28.05	27 43 49.9	22.89	17	19 57 13.90	23 32 55.0	80.34
18	18 15 42.45	27 41 32.5	24.23	18	19 59 18.06	23 24 52.9	81.37
19	18 17 56.69	27 39 7.1	25.57	19	20 1 21.97	23 16 44.7	82.39
20	18 20 10.77	27 36 33.6	26.90	20	20 3 25.65	23 8 30.3	83.41
21	18 22 24.68	27 33 52.2	28.22	21	20 5 29.09	23 0 9.8	84.41
22	18 24 38.43	27 31 2.9	29.54	22	20 7 32.29	22 51 43.3	85.41
23	18 26 52.00	S. 27 28 5.6	30.85	23	20 9 35.26	S. 22 43 10.8	86.40
SATURDAY 26.				MONDAY 28.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	18 29 5.39	S. 27 25 0.5	32.16	0	20 11 37.99	S. 22 34 32.4	87.39
1	18 31 18.61	27 21 47.5	33.46	1	20 13 40.49	22 25 48.1	88.36
2	18 33 31.64	27 18 26.7	34.76	2	20 15 42.75	22 16 57.9	89.33
3	18 35 44.49	27 14 58.1	36.05	3	20 17 44.78	22 8 1.8	90.29
4	18 37 57.15	27 11 21.8	37.34	4	20 19 46.58	21 59 0.0	91.25
5	18 40 9.62	27 7 37.7	38.62	5	20 21 48.15	21 49 52.5	92.20
6	18 42 21.89	27 3 46.0	39.89	6	20 23 49.49	21 40 39.3	93.13
7	18 44 33.97	26 59 46.7	41.16	7	20 25 50.60	21 31 20.5	94.07
8	18 46 45.85	26 55 39.7	42.42	8	20 27 51.48	21 21 56.1	94.99
9	18 48 57.53	26 51 25.1	43.68	9	20 29 52.13	21 12 26.1	95.91
10	18 51 8.99	26 47 3.0	44.93	10	20 31 52.56	21 2 50.6	96.82
11	18 53 20.26	26 42 33.4	46.17	11	20 33 52.77	20 53 9.7	97.72
12	18 55 31.31	26 37 56.4	47.41	12	20 35 52.75	20 43 23.3	98.62
13	18 57 42.16	26 33 11.9	48.64	13	20 37 52.52	20 33 31.6	99.50
14	18 59 52.79	26 28 20.1	49.86	14	20 39 52.07	20 23 34.5	100.38
15	19 2 3.20	26 23 20.9	51.08	15	20 41 51.40	20 13 32.2	101.26
16	19 4 13.40	26 18 14.3	52.29	16	20 43 50.51	20 3 24.6	102.12
17	19 6 23.38	26 13 0.5	53.50	17	20 45 49.41	19 53 11.9	102.98
18	19 8 33.14	26 7 39.5	54.70	18	20 47 48.10	19 42 54.0	103.83
19	19 10 42.67	26 2 11.3	55.89	19	20 49 46.58	19 32 31.0	104.67
20	19 12 51.99	25 56 35.9	57.07	20	20 51 44.86	19 22 3.0	105.50
21	19 15 1.07	25 50 53.5	58.25	21	20 53 42.92	19 11 29.9	106.33
22	19 17 9.94	25 45 3.9	59.42	22	20 55 40.78	19 0 51.9	107.15
23	19 19 18.57	25 39 7.3	60.59	23	20 57 38.44	18 50 8.9	107.96
24	19 21 26.97	S. 25 33 3.8		24	20 59 35.90	S. 18 39 21.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
TUESDAY 29.				THURSDAY 31.			
0	^h 20 ^m 59 ^s 35° 90	S. 18° 39' 21" 1	108° 77	0	^h 22 ^m 30 ^s 31° 35	S. 8° 40' 10" 9	138° 59
1	21 1 33° 16	18 28 28° 5	109° 57	1	22 32 22° 48	8 26 19° 3	139° 03
2	21 3 30° 23	18 17 31° 0	110° 36	2	22 34 13° 56	8 12 25° 1	139° 45
3	21 5 27° 10	18 6 28° 8	111° 14	3	22 36 4° 61	7 58 28° 4	139° 87
4	21 7 23° 78	17 55 22° 0	111° 92	4	22 37 55° 62	7 44 29° 1	140° 28
5	21 9 20° 27	17 44 10° 5	112° 68	5	22 39 46° 59	7 30 27° 4	140° 68
6	21 11 16° 58	17 32 54° 3	113° 44	6	22 41 37° 53	7 16 23° 3	141° 07
7	21 13 12° 70	17 21 33° 6	114° 20	7	22 43 28° 45	7 2 16° 9	141° 46
8	21 15 8° 65	17 10 8° 4	114° 94	8	22 45 19° 35	6 48 8° 1	141° 83
9	21 17 4° 41	16 58 38° 7	115° 68	9	22 47 10° 23	6 33 57° 1	142° 20
10	21 19 0° 00	16 47 4° 6	116° 41	10	22 49 1° 10	6 19 43° 9	142° 56
11	21 20 55° 42	16 35 26° 1	117° 13	11	22 50 51° 95	6 5 28° 5	142° 91
12	21 22 50° 66	16 23 43° 3	117° 85	12	22 52 42° 80	5 51 11° 0	143° 25
13	21 24 45° 74	16 11 56° 2	118° 56	13	22 54 33° 65	5 36 51° 4	143° 59
14	21 26 40° 65	16 0 4° 8	119° 26	14	22 56 24° 50	5 22 29° 9	143° 91
15	21 28 35° 40	15 48 9° 2	119° 95	15	22 58 15° 35	5 8 6° 4	144° 23
16	21 30 29° 99	15 36 9° 5	120° 64	16	23 0 6° 22	4 53 41° 0	144° 54
17	21 32 24° 42	15 24 5° 6	121° 32	17	23 1 57° 10	4 39 13° 7	144° 84
18	21 34 18° 70	15 11 57° 7	121° 99	18	23 3 48° 00	4 24 44° 6	145° 13
19	21 36 12° 83	14 59 45° 7	122° 65	19	23 5 38° 92	4 10 13° 8	145° 42
20	21 38 6° 81	14 47 29° 8	123° 31	20	23 7 29° 87	3 55 41° 2	145° 69
21	21 40 0° 65	14 35 9° 9	123° 96	21	23 9 20° 85	3 41 7° 0	145° 96
22	21 41 54° 34	14 22 46° 1	124° 60	22	23 11 11° 86	3 26 31° 3	146° 21
23	21 43 47° 89	S. 14° 10' 18" 5	125° 23	23	23 13 2° 91	S. 3° 11' 54" 0	146° 46
WEDNESDAY 30.				FRIDAY, APRIL 1.			
0	21 45 41° 31	S. 13° 57' 47" 1	125° 86	0	23 14 54° 01	S. 2° 57' 15" 2	
1	21 47 34° 60	13 45 11° 9	126° 47	<div>PHASES OF THE MOON.</div> <div> <div>d h m</div> <div>☉ New Moon - - 4 7 10° 6</div> <div>☾ First Quarter - 11 16 39° 3</div> <div>☉ Full Moon - - 18 9 45° 1</div> <div>☾ Last Quarter - 25 21 27° 4</div> </div>			
2	21 49 27° 75	13 32 33° 1	127° 09				
3	21 51 20° 79	13 19 50° 5	127° 69				
4	21 53 13° 69	13 7 4° 3	128° 29				
5	21 55 6° 48	12 54 14° 6	128° 87				
6	21 56 59° 16	12 41 21° 3	129° 45				
7	21 58 51° 72	12 28 24° 6	130° 03				
8	22 0 44° 17	12 15 24° 4	130° 59				
9	22 2 36° 51	12 2 20° 8	131° 15				
10	22 4 28° 76	11 49 13° 8	131° 70				
11	22 6 20° 90	11 36 3° 6	132° 25				
12	22 8 12° 95	11 22 50° 1	132° 78				
13	22 10 4° 91	11 9 33° 4	133° 31				
14	22 11 56° 77	10 56 13° 5	133° 83				
15	22 13 48° 56	10 42 50° 5	134° 34				
16	22 15 40° 26	10 29 24° 4	134° 84				
17	22 17 31° 88	10 15 55° 3	135° 34				
18	22 19 23° 42	10 2 23° 3	135° 83				
19	22 21 14° 90	9 48 48° 3	136° 31				
20	22 23 6° 31	9 35 10° 4	136° 78				
21	22 24 57° 66	9 21 29° 6	137° 25				
22	22 26 48° 94	9 7 46° 1	137° 70				
23	22 28 40° 17	8 53 59° 9	138° 15				
24	22 30 31° 35	S. 8° 40' 10" 9					

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
1	Spica W.	101 53 58	3052	103 23 7	3047	104 52 22	3041	106 21 44	3036
	Antares W.	56 1 4	3048	57 30 17	3043	58 59 36	3039	60 29 1	3034
	SUN E.	36 35 18	3431	35 13 37	3427	33 51 51	3421	32 29 58	3416
6	SUN W.	19 50 30	3112	21 18 25	3103	22 46 31	3092	24 14 50	3082
	Aldebaran E.	63 17 54	2846	61 44 26	2841	60 10 52	2835	58 37 10	2831
	Jupiter E.	67 56 4	2804	66 21 41	2797	64 47 9	2789	63 12 26	2781
	Saturn E.	121 8 32	2733	119 32 36	2724	117 56 28	2716	116 20 10	2708
7	SUN W.	31 39 26	3034	33 8 56	3025	34 38 38	3015	36 8 32	3006
	Aldebaran E.	50 47 18	2813	49 13 7	2811	47 38 54	2810	46 4 39	2805
	Jupiter E.	55 16 22	2744	53 40 40	2736	52 4 48	2729	50 28 47	2722
	Pollux E.	92 55 59	2690	91 19 5	2682	89 42 1	2672	88 4 44	2664
	Saturn E.	108 15 49	2666	106 38 23	2658	105 0 46	2649	103 22 57	2641
8	SUN W.	43 40 58	2958	45 12 3	2949	46 43 19	2939	48 14 48	2930
	Aldebaran E.	38 13 43	2825	36 39 48	2834	35 6 4	2845	33 32 35	2858
	Jupiter E.	42 26 29	2690	40 49 36	2685	39 12 36	2680	37 35 29	2675
	Pollux E.	79 55 30	2622	78 17 5	2613	76 38 28	2605	74 59 40	2596
	Saturn E.	95 11 3	2598	93 32 5	2590	91 52 56	2581	90 13 35	2572
9	SUN W.	55 55 11	2883	57 27 52	2873	59 0 46	2863	60 33 52	2853
	Mars W.	17 52 12	2912	19 24 16	2885	20 56 54	2861	22 30 3	2840
	Jupiter E.	29 28 38	2663	27 51 8	2664	26 13 39	2667	24 36 15	2673
	Pollux E.	66 42 41	2553	65 2 42	2545	63 22 31	2536	61 42 8	2527
	Saturn E.	81 53 52	2530	80 13 20	2520	78 32 35	2512	76 51 38	2503
	Regulus E.	103 35 53	2544	101 55 41	2535	100 15 16	2527	98 34 40	2517
10	SUN W.	68 22 31	2804	69 56 54	2795	71 31 29	2785	73 6 17	2775
	Mars W.	30 21 53	2757	31 57 17	2744	33 32 58	2730	35 8 58	2718
	α Arietis W.	22 18 14	2588	23 57 26	2564	25 37 10	2543	27 17 23	2534
	Pollux E.	53 17 12	2484	51 35 37	2476	49 53 50	2467	48 11 51	2458
	Saturn E.	68 23 46	2458	66 41 33	2449	64 59 8	2440	63 16 30	2431
	Regulus E.	90 8 28	2472	88 26 35	2463	86 44 30	2453	85 2 11	2445
11	SUN W.	81 3 35	2725	82 39 42	2715	84 16 2	2705	85 52 36	2695
	Mars W.	43 13 1	2658	44 50 37	2647	46 28 28	2636	48 6 34	2625
	α Arietis W.	35 44 30	2448	37 26 57	2435	39 9 42	2422	40 52 46	2410
	Pollux E.	39 38 56	2418	37 55 47	2410	36 12 27	2403	34 28 56	2396
	Saturn E.	54 40 6	2385	52 56 9	2376	51 12 0	2367	49 27 38	2358
	Regulus E.	76 27 22	2398	74 43 44	2389	72 59 53	2380	71 15 49	2370
12	SUN W.	93 58 43	2646	95 36 36	2636	97 14 42	2627	98 53 1	2618
	Mars W.	56 20 44	2572	58 0 17	2562	59 40 4	2553	61 20 4	2543
	α Arietis W.	49 32 14	2354	51 16 55	2344	53 1 51	2333	54 47 2	2324
	Aldebaran W.	20 18 7	2997	21 48 24	2891	23 20 54	2806	24 55 14	2733
	Saturn E.	40 42 31	2313	38 56 51	2304	37 10 58	2296	35 24 53	2287
	Regulus E.	62 32 9	2324	60 46 45	2315	59 1 8	2307	57 15 19	2298
13	SUN W.	107 7 42	2572	108 47 15	2564	110 26 59	2556	112 6 54	2548
	Mars W.	69 43 24	2497	71 24 42	2488	73 6 12	2479	74 47 54	2472
	α Arietis W.	63 36 26	2278	65 22 58	2269	67 9 43	2260	68 56 41	2253
	Aldebaran W.	33 6 18	2510	34 47 18	2480	36 29 0	2453	38 11 20	2449
	Jupiter W.	26 17 57	2385	28 1 53	2366	29 46 16	2350	31 31 3	2338

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
1	Spica W.	107 51 12 3031		109 20 47 3026		110 50 28 3019		112 20 17 3013	
	Antares W.	61 58 32 3027		63 28 11 3022		64 57 57 3016		66 27 50 3010	
	SUN E.	31 8 0 3410		29 45 55 3405		28 23 44 3398		27 1 25 3393	
6	SUN W.	25 43 22 3073		27 12 5 3063		28 41 0 3053		30 10 7 3043	
	Aldebaran E.	57 3 22 2827		55 29 29 2822		53 55 30 2818		52 21 26 2815	
	Jupiter E.	61 37 33 2773		60 2 30 2766		58 27 17 2758		56 51 54 2751	
	Saturn E.	114 43 40 2699		113 6 59 2691		111 30 7 2683		109 53 4 2674	
7	SUN W.	37 38 38 2997		39 8 55 2987		40 39 24 2977		42 10 5 2968	
	Aldebaran E.	44 30 23 2810		42 56 8 2811		41 21 55 2814		39 47 46 2819	
	Jupiter E.	48 52 37 2716		47 16 18 2709		45 39 50 2703		44 3 14 2696	
	Pollux E.	86 27 16 2656		84 49 37 2647		83 11 46 2639		81 33 44 2630	
	Saturn E.	101 44 57 2632		100 6 46 2624		98 28 23 2615		96 49 49 2607	
8	SUN W.	49 46 28 2920		51 18 21 2912		52 50 25 2902		54 22 42 2892	
	Aldebaran E.	31 59 22 2876		30 26 32 2898		28 54 11 2926		27 22 25 2960	
	Jupiter E.	35 58 16 2671		34 20 57 2668		32 43 34 2665		31 6 7 2663	
	Pollux E.	73 20 39 2588		71 41 28 2579		70 2 4 2571		68 22 29 2561	
	Saturn E.	88 34 2 2564		86 54 18 2555		85 14 21 2547		83 34 13 2538	
9	SUN W.	62 7 11 2844		63 40 42 2834		65 14 26 2824		66 48 22 2814	
	Mars W.	24 3 39 2821		25 37 40 2803		27 12 4 2787		28 46 49 2772	
	Jupiter E.	22 58 58 2682		21 21 54 2695		19 45 7 2714		18 8 46 2745	
	Pollux E.	60 1 33 2519		58 20 46 2510		56 39 47 2502		54 58 36 2492	
	Saturn E.	75 10 29 2494		73 29 7 2485		71 47 32 2476		70 5 45 2467	
	Regulus E.	96 53 51 2508		95 12 49 2499		93 31 35 2490		91 50 8 2481	
10	SUN W.	74 41 18 2764		76 16 33 2755		77 52 0 2744		79 27 41 2734	
	Mars W.	36 45 14 2705		38 21 47 2694		39 58 35 2681		41 35 40 2669	
	α Arietis W.	28 58 3 2507		30 39 7 2490		32 20 34 2475		34 2 22 2461	
	Pollux E.	46 29 39 2450		44 47 16 2442		43 4 41 2434		41 21 54 2426	
	Saturn E.	61 33 39 2422		59 50 35 2413		58 7 19 2403		56 23 49 2394	
	Regulus E.	83 19 40 2435		81 36 55 2426		79 53 57 2417		78 10 46 2407	
11	SUN W.	87 29 23 2685		89 6 23 2675		90 43 37 2665		92 21 4 2656	
	Mars W.	49 44 55 2614		51 23 31 2604		53 2 21 2593		54 41 26 2583	
	α Arietis W.	42 36 7 2398		44 19 45 2387		46 3 39 2375		47 47 49 2365	
	Pollux E.	32 45 15 2389		31 1 25 2382		29 17 25 2377		27 33 18 2373	
	Saturn E.	47 43 3 2348		45 58 14 2340		44 13 13 2331		42 27 58 2322	
	Regulus E.	69 31 31 2361		67 47 1 2351		66 2 16 2343		64 17 19 2334	
12	SUN W.	100 31 32 2608		102 10 16 2599		103 49 13 2590		105 28 21 2581	
	Mars W.	63 0 18 2533		64 40 45 2524		66 21 25 2514		68 2 18 2505	
	α Arietis W.	56 32 27 2314		58 18 6 2304		60 3 59 2295		61 50 6 2286	
	Aldebaran W.	26 31 7 2675		28 8 21 2625		29 46 42 2581		31 26 4 2543	
	Saturn E.	33 38 35 2280		31 52 6 2271		30 5 24 2264		28 18 31 2256	
	Regulus E.	55 29 17 2289		53 43 1 2281		51 56 34 2272		50 9 54 2264	
13	SUN W.	113 47 0 2540		115 27 17 2533		117 7 45 2526		118 48 22 2519	
	Mars W.	76 29 48 2464		78 11 52 2456		79 54 7 2448		81 36 33 2442	
	α Arietis W.	70 43 50 2245		72 31 11 2238		74 18 42 2231		76 6 24 2224	
	Aldebaran W.	39 54 13 2407		41 37 37 2388		43 21 29 2371		45 5 46 2355	
	Jupiter W.	33 16 11 2322		35 1 38 2309		36 47 24 2298		38 33 26 2288	

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Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	
11	Regulus W.	101 22 10	2905	102 54 22	2913	104 26 24	2920	105 58 18	1
	Spica W.	47 21 10	2912	48 53 13	2919	50 25 8	2926	51 56 54	1
	α Aquilæ E.	59 20 37	3887	58 7 4	3928	56 54 13	3972	55 42 54	4
	Fomalhaut E.	81 22 25	3243	79 57 7	3254	78 32 2	3266	77 7 11	3
	α Pegasi E.	103 12 39	3101	101 44 31	3106	100 16 29	3111	98 48 33	3
12	Spica W.	59 33 38	2965	61 4 35	2970	62 35 25	2976	64 6 8	2
	Antares W.	13 39 20	2961	15 10 22	2967	16 41 16	2972	18 12 42	2
	α Aquilæ E.	49 53 53	4305	48 47 5	4376	47 41 22	4453	46 36 48	4
	Fomalhaut E.	70 6 18	3339	68 42 52	3354	67 19 43	3368	65 56 50	3
	α Pegasi E.	91 30 36	3146	90 3 22	3152	88 36 15	3157	87 9 15	3
13	Spica W.	71 38 3	3006	73 8 8	3011	74 38 7	3016	76 8 0	3
	Antares W.	25 44 25	3003	27 14 34	3007	28 44 38	3011	30 14 37	3
	Fomalhaut E.	59 7 0	3471	57 46 3	3491	56 25 29	3513	55 5 19	3
	α Pegasi E.	79 56 6	3195	78 29 51	3203	77 3 45	3209	75 37 46	3
	α Arietis E.	122 14 58	3024	120 45 15	3028	119 15 37	3032	117 46 4	3
14	Spica W.	83 36 13	3039	85 5 37	3042	86 34 58	3046	88 4 14	3
	Antares W.	37 43 14	3035	39 12 43	3038	40 42 9	3042	42 11 30	3
	Fomalhaut E.	48 31 26	3678	47 14 15	3714	45 57 43	3752	44 41 50	3
	α Pegasi E.	68 30 1	3253	67 4 55	3261	65 39 58	3270	64 15 12	3
	α Arietis E.	110 19 24	3052	108 50 16	3056	107 21 12	3059	105 52 12	3
15	Spica W.	95 29 45	3062	96 58 41	3064	98 27 35	3065	99 56 27	3
	Antares W.	49 37 26	3057	51 6 28	3060	52 35 27	3061	54 4 24	3
	Fomalhaut E.	38 34 34	4070	37 24 3	4143	36 14 43	4225	35 6 41	43
	α Pegasi E.	57 14 4	3330	55 50 27	3341	54 27 3	3354	53 3 54	33
	α Arietis E.	98 27 59	3073	96 59 16	3076	95 30 37	3077	94 1 59	30
16	Spica W.	107 20 18	3074	108 48 59	3074	110 17 40	3075	111 46 21	30
	Antares W.	61 28 41	3069	62 57 28	3069	64 26 15	3070	65 55 1	30
	α Pegasi E.	46 12 20	3450	44 51 0	3471	43 30 4	3494	42 9 33	35
	α Arietis E.	86 39 19	3085	85 10 51	3086	83 42 24	3086	82 13 57	30
	Aldebaran E.	118 17 39	3162	116 50 45	3160	115 23 48	3158	113 56 49	31
17	Antares W.	73 18 53	3068	74 47 42	3067	76 16 32	3065	77 45 24	30
	α Pegasi E.	35 34 57	3692	34 18 2	3741	33 1 58	3795	31 46 50	38
	α Arietis E.	74 51 45	3085	73 23 17	3084	71 54 48	3083	70 26 18	30
	Aldebaran E.	106 41 22	3147	105 14 10	3144	103 46 54	3143	102 19 36	31
18	Antares W.	85 10 19	3052	86 39 27	3048	88 8 40	3045	89 37 57	30
	α Aquilæ W.	42 14 22	4922	43 12 19	4815	44 11 43	4718	45 12 27	46
	α Arietis E.	63 3 18	3072	61 34 34	3069	60 5 47	3066	58 36 56	30
	Aldebaran E.	95 2 18	3125	93 34 39	3122	92 5 56	3118	90 39 8	31
19	Antares W.	97 5 40	3017	98 35 32	3012	100 5 30	3006	101 35 36	29
	α Aquilæ W.	50 33 46	4270	51 41 6	4214	52 49 19	4161	53 58 22	41
	Fomalhaut W.	26 28 40	5565	27 18 39	5302	28 11 45	5074	29 7 43	487
	α Arietis E.	51 11 37	3044	49 42 19	3039	48 12 54	3035	46 43 24	303
	Aldebaran E.	83 18 55	3092	81 50 35	3087	80 22 9	3081	78 53 36	307
20	SUN E.	131 26 5	3383	130 3 29	3376	128 40 45	3370	127 17 54	336
	α Aquilæ W.	59 54 58	3900	61 8 18	3864	62 22 14	3830	63 36 45	379

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		° ' "		° ' "		° ' "		° ' "	
11	Regulus W.	107 30 2	2934	109 1 38	2941	110 33 5	2947	112 4 24	2954
	Spica W.	53 28 31	2939	55 0 0	2946	56 31 20	2952	58 2 33	2958
	α Aquilæ E.	54 30 44	4068	53 20 11	4121	52 10 30	4178	51 1 43	4239
	Fomalhaut E.	75 42 32	3288	74 18 7	3300	72 53 56	3313	71 29 59	3326
	α Pegasi E.	97 20 44	3123	95 53 2	3128	94 25 26	3134	92 57 58	3140
12	Spica W.	65 36 43	2986	67 7 13	2992	68 37 36	2997	70 7 52	3001
	Antares W.	19 42 45	2983	21 13 19	2988	22 43 47	2993	24 14 9	2998
	α Aquilæ E.	45 33 27	4625	44 31 24	4723	43 30 44	4831	42 31 33	4947
	Fomalhaut E.	64 34 15	3399	63 11 57	3415	61 49 58	3433	60 28 19	3451
	α Pegasi E.	85 42 22	3170	84 15 37	3176	82 48 59	3183	81 22 29	3188
13	Spica W.	77 37 49	3024	79 7 32	3028	80 37 10	3031	82 6 44	3035
	Antares W.	31 44 30	3020	33 14 18	3024	34 44 1	3027	36 13 40	3031
	Fomalhaut E.	53 45 35	3361	52 26 18	3387	51 7 29	3615	49 49 11	3646
	α Pegasi E.	74 11 56	3223	72 46 14	3230	71 20 41	3237	69 55 16	3246
	α Arietis E.	116 16 35	3039	114 47 11	3043	113 17 51	3047	111 48 36	3049
14	Spica W.	89 33 27	3051	91 2 37	3054	92 31 43	3057	94 0 45	3059
	Antares W.	43 40 48	3047	45 10 3	3051	46 39 13	3053	48 8 21	3055
	Fomalhaut E.	43 26 41	3838	42 12 18	3889	40 58 47	3943	39 46 10	4003
	α Pegasi E.	62 50 36	3288	61 26 10	3298	60 1 56	3308	58 37 54	3319
	α Arietis E.	104 23 15	3064	102 54 21	3067	101 25 31	3069	99 56 43	3072
15	Spica W.	101 25 16	3069	102 54 4	3070	104 22 50	3072	105 51 34	3072
	Antares W.	55 33 19	3064	57 2 12	3066	58 31 3	3068	59 59 52	3068
	Fomalhaut E.	34 0 5	4421	32 55 3	4538	31 51 44	4670	30 50 19	4819
	α Pegasi E.	51 41 0	3181	50 18 22	3197	48 56 2	3244	47 34 1	3431
	α Arietis E.	92 33 24	3080	91 4 50	3082	89 36 18	3083	88 7 48	3084
16	Spica W.	113 15 0	3075	114 43 40	3075	116 12 20	3075	117 41 0	3074
	Antares W.	67 23 47	3070	68 52 33	3070	70 21 19	3069	71 50 6	3069
	α Pegasi E.	40 49 30	3547	39 29 58	3578	38 10 59	3612	36 52 38	3649
	α Arietis E.	80 45 31	3087	79 17 5	3087	77 48 39	3086	76 20 12	3086
	Aldebaran E.	112 29 48	3155	111 2 45	3153	109 35 40	3151	108 8 32	3149
17	Antares W.	79 14 17	3062	80 43 13	3060	82 12 12	3057	83 41 14	3055
	α Pegasi E.	30 32 47	3929	29 19 57	4011	28 8 28	4106	26 58 32	4217
	α Arietis E.	68 57 46	3081	67 29 13	3078	66 0 37	3077	64 31 59	3074
	Aldebaran E.	100 52 16	3137	99 24 51	3135	97 57 24	3132	96 29 53	3129
18	Antares W.	91 7 18	3037	92 36 45	3032	94 6 18	3028	95 35 56	3023
	α Aquilæ W.	46 14 28	4545	47 17 40	4469	48 22 0	4398	49 27 23	4332
	α Arietis E.	57 8 1	3060	55 39 2	3056	54 9 59	3052	52 40 50	3048
	Aldebaran E.	89 11 16	3110	87 43 19	3105	86 15 16	3101	84 47 8	3097
19	Antares W.	103 5 50	2992	104 36 13	2985	106 6 44	2977	107 37 25	2969
	α Aquilæ W.	55 8 14	4063	56 18 52	4019	57 30 13	3976	58 42 16	3937
	Fomalhaut W.	30 6 18	4701	31 7 17	4548	32 10 27	4413	33 15 37	4292
	α Arietis E.	45 13 48	3024	43 44 5	3019	42 14 16	3013	40 44 20	3008
	Aldebaran E.	77 24 57	3069	75 56 10	3064	74 27 16	3057	72 58 14	3051
	Sun E.	125 54 54	3355	124 31 46	3346	123 8 28	3338	121 45 1	3330
20	α Aquilæ W.	64 51 50	3766	66 7 28	3737	67 23 36	3708	68 40 15	3681

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Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
13	Regulus E.	48 23 1	2256	46 35 57	2249	44 48 42	2240	43 1 14	2233
	Spica E.	102 24 45	2260	100 37 46	2251	98 50 35	2243	97 3 12	2236
14	SUN W.	120 29 8	2512	122 10 4	2507	123 51 8	2501	125 32 20	2495
	Mars W.	83 19 8	2435	85 1 53	2429	86 44 47	2423	88 27 49	2417
	α Arietis W.	77 54 16	2217	79 42 18	2211	81 30 29	2205	83 18 49	2200
	Aldebaran W.	46 50 26	2340	48 35 28	2326	50 20 50	2314	52 6 29	2302
	Jupiter W.	40 19 43	2278	42 6 15	2269	43 53 0	2261	45 39 57	2254
	Regulus E.	34 1 18	2199	32 12 49	2194	30 24 12	2188	28 35 26	2182
	Spica E.	88 3 36	2202	86 15 12	2196	84 26 39	2190	82 37 57	2185
15	Mars W.	97 4 49	2396	98 48 30	2392	100 32 16	2390	102 16 5	2388
	Aldebaran W.	60 58 31	2260	62 45 30	2253	64 32 39	2247	66 19 56	2243
	Jupiter W.	54 37 12	2224	56 25 4	2220	58 13 1	2217	60 1 3	2214
	Pollux W.	17 45 43	2239	19 33 12	2223	21 21 5	2211	23 9 17	2201
	Spica E.	73 32 40	2164	71 43 19	2161	69 53 53	2159	68 4 24	2157
16	Mars W.	110 55 40	2385	112 39 36	2387	114 23 29	2388	116 7 21	2391
	Aldebaran W.	75 17 42	2230	77 5 25	2230	78 53 8	2231	80 40 50	2231
	Jupiter W.	69 2 7	2207	70 50 24	2208	72 38 40	2209	74 26 55	2210
	Pollux W.	32 13 1	2176	34 2 4	2175	35 51 9	2174	37 40 16	2174
	Spica E.	58 56 27	2154	57 6 50	2155	55 17 15	2157	53 27 43	2159
	Antares E.	104 48 30	2150	102 58 47	2151	101 9 6	2153	99 19 27	2154
17	Aldebaran W.	89 38 40	2247	91 25 58	2252	93 13 9	2258	95 0 11	2264
	Jupiter W.	83 27 17	2226	85 15 5	2231	87 2 46	2237	88 50 18	2243
	Pollux W.	46 45 24	2185	48 34 14	2190	50 22 57	2195	52 11 33	2200
	Saturn W.	31 47 41	2164	33 37 3	2169	35 26 18	2174	37 15 25	2180
	Spica E.	44 21 2	2177	42 32 0	2183	40 43 7	2189	38 54 22	2196
	Antares E.	90 12 8	2171	88 22 57	2176	86 33 54	2182	84 44 59	2188
18	Jupiter W.	97 45 25	2283	99 31 49	2292	101 18 0	2302	103 3 56	2313
	Pollux W.	61 12 13	2236	62 59 47	2245	64 47 7	2254	66 34 14	2264
	Saturn W.	46 18 30	2217	48 6 32	2227	49 54 20	2237	51 41 53	2246
	Regulus W.	24 13 5	2226	26 0 54	2236	27 48 28	2245	29 35 49	2255
	Antares E.	75 42 57	2226	73 55 9	2235	72 7 34	2245	70 20 14	2255
19	Pollux W.	75 25 55	2321	77 11 24	2333	78 56 35	2346	80 41 27	2360
	Saturn W.	60 35 43	2303	62 21 38	2317	64 7 13	2329	65 52 30	2343
	Regulus W.	38 28 33	2313	40 14 14	2326	41 59 36	2338	43 44 40	2352
	Antares E.	61 27 31	2313	59 41 50	2326	57 56 28	2339	56 11 25	2352
	α Aquilæ E.	112 2 31	3148	110 35 19	3141	109 7 59	3137	107 40 34	3134
20	Pollux W.	89 20 48	2432	91 3 37	2446	92 46 6	2462	94 28 12	2478
	Saturn W.	74 33 52	2415	76 17 5	2430	77 59 57	2446	79 42 27	2461
	Regulus W.	52 24 57	2424	54 7 58	2439	55 50 37	2454	57 32 55	2470
	Antares E.	47 31 9	2424	45 48 9	2439	44 5 30	2455	42 23 13	2471
	α Aquilæ E.	100 23 36	3152	98 56 29	3160	97 29 32	3170	96 2 47	3181
	Venus E.	114 10 18	2791	112 35 38	2808	111 1 20	2824	109 27 23	2841
21	Saturn W.	88 9 22	2542	89 49 37	2558	91 29 30	2574	93 9 0	2590
	Regulus W.	65 58 49	2551	67 38 52	2567	69 18 33	2583	70 57 52	2600
	Antares E.	33 57 23	2551	32 17 21	2567	30 37 41	2584	28 58 24	2600
	α Aquilæ E.	88 52 48	3254	87 27 43	3273	86 3 0	3292	84 38 39	3312

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13	Regulus E.	41 13 36	2226	39 25 47	2219	37 37 47	2212	35 49 37	2206
	Spica E.	95 15 38	2229	93 27 53	2221	91 39 57	2215	89 51 52	2208
14	Sun W.	127 13 40	2490	128 55 7	2486	130 36 40	2482	132 18 19	2478
	Mars W.	90 10 59	2412	91 54 17	2407	93 37 41	2403	95 21 12	2398
	α Arietis W.	85 7 17	2194	86 55 53	2190	88 44 35	2186	90 33 24	2182
	Aldebaran W.	53 52 26	2292	55 38 37	2282	57 25 3	2274	59 11 41	2266
	Jupiter W.	47 27 5	2247	49 14 23	2240	51 1 51	2234	52 49 28	2229
	Regulus E.	26 46 32	2178	24 57 31	2173	23 8 22	2169	21 19 8	2165
	Spica E.	80 49 7	2180	79 0 10	2176	77 11 6	2171	75 21 55	2168
15	Mars W.	103 59 57	2386	105 43 52	2386	107 27 47	2385	109 11 44	2385
	Aldebaran W.	68 7 20	2239	69 54 49	2235	71 42 24	2233	73 30 2	2232
	Jupiter W.	61 49 10	2211	63 37 21	2209	65 25 35	2208	67 13 50	2207
	Pollux W.	24 57 43	2193	26 46 21	2188	28 35 7	2183	30 24 1	2179
	Spica E.	66 14 52	2155	64 25 17	2154	62 35 41	2154	60 46 4	2154
16	Mars W.	117 51 8	2394	119 34 52	2398	121 18 30	2402	123 2 2	2407
	Aldebaran W.	82 28 31	2233	84 16 10	2236	86 3 44	2238	87 51 15	2242
	Jupiter W.	76 15 7	2212	78 3 17	2215	79 51 22	2218	81 39 22	2222
	Pollux W.	39 29 22	2175	41 18 28	2177	43 7 30	2179	44 56 29	2182
	Spica E.	51 38 13	2161	49 48 47	2164	47 59 26	2168	46 10 11	2172
	Antares E.	97 29 50	2157	95 40 17	2160	93 50 49	2163	92 1 25	2167
17	Aldebaran W.	96 47 3	2271	98 33 46	2279	100 20 16	2287	102 6 34	2297
	Jupiter W.	90 37 41	2250	92 24 54	2257	94 11 56	2265	95 58 47	2274
	Pollux W.	54 0 1	2206	55 48 20	2213	57 36 29	2220	59 24 26	2227
	Saturn W.	39 4 23	2186	40 53 12	2194	42 41 49	2201	44 30 16	2209
	Spica E.	37 5 48	2202	35 17 24	2210	33 29 12	2220	31 41 14	2229
	Antares E.	82 56 13	2194	81 7 37	2202	79 19 12	2210	77 30 59	2217
18	Jupiter W.	104 49 37	2324	106 35 1	2335	108 20 9	2348	110 4 59	2360
	Pollux W.	68 21 6	2274	70 7 43	2285	71 54 4	2297	73 40 8	2309
	Saturn W.	53 29 12	2257	55 16 15	2268	57 3 1	2279	58 49 31	2291
	Regulus W.	31 22 54	2266	33 9 44	2277	34 56 17	2288	36 42 34	2300
	Antares E.	68 33 9	2266	66 46 19	2277	64 59 46	2289	63 13 30	2300
19	Pollux W.	82 25 59	2373	84 10 12	2387	85 54 5	2402	87 37 37	2417
	Saturn W.	67 37 27	2357	69 22 4	2371	71 6 21	2385	72 50 17	2400
	Regulus W.	45 29 24	2366	47 13 48	2380	48 57 52	2394	50 41 35	2409
	Antares E.	54 26 41	2366	52 42 17	2380	50 58 13	2395	49 14 31	2409
	α Aquilæ E.	106 13 6	3134	104 45 38	3137	103 18 13	3140	101 50 51	3145
20	Pollux W.	96 9 56	2494	97 51 18	2510	99 32 18	2526	101 12 55	2543
	Saturn W.	81 24 35	2477	83 6 20	2493	84 47 43	2509	86 28 44	2525
	Regulus W.	59 14 50	2486	60 56 23	2502	62 37 34	2517	64 18 23	2534
	Antares E.	40 41 19	2486	38 59 46	2502	37 18 36	2518	35 37 48	2535
	α Aquilæ E.	94 36 15	3193	93 9 58	3207	91 43 57	3221	90 18 13	3237
	Venus E.	107 53 49	2858	106 20 36	2875	104 47 45	2893	103 15 17	2910
21	Saturn W.	94 48 8	2607	96 26 53	2623	98 5 16	2640	99 43 16	2656
	Regulus W.	72 36 47	2615	74 15 21	2632	75 53 32	2648	77 31 22	2665
	Antares E.	27 19 29	2617	25 40 57	2634	24 2 48	2649	22 25 0	2666
	α Aquilæ E.	83 14 41	3333	81 51 8	3356	80 28 1	3379	79 5 20	3403

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.	
21	Venus E.	101 43 11	2928	100 11 28	2946	98 40 7	2964	97 9 9	2981	
22	Saturn W.	101 20 55	2672	102 58 12	2689	104 35 7	2705	106 11 41	2720	
	Regulus W.	79 8 49	2681	80 45 55	2697	82 22 39	2713	83 59 2	2729	
	Spica W.	25 11 20	2696	26 48 5	2710	28 24 31	2725	30 0 38	2740	
	α Aquilæ E.	77 43 7	3428	76 21 22	3454	75 0 7	3482	73 39 23	3511	
	Venus E.	89 39 51	3070	88 11 5	3087	86 42 40	3105	85 14 37	3123	
	SUN E.	134 11 16	3034	132 41 46	3052	131 12 37	3069	129 43 49	3085	
23	Regulus W.	91 55 49	2804	93 30 11	2818	95 4 15	2833	96 38 0	2847	
	Spica W.	37 56 22	2812	39 30 34	2825	41 4 29	2840	42 38 5	2853	
	α Aquilæ E.	67 3 59	3672	65 46 42	3708	64 30 3	3745	63 14 3	3785	
	Venus E.	77 59 30	3206	76 33 28	3221	75 7 44	3238	73 42 20	3253	
	Fomalhaut E.	90 4 39	3112	88 36 44	3126	87 9 6	3142	85 41 47	3157	
	SUN E.	122 24 50	3167	120 58 1	3182	119 31 30	3198	118 5 18	3212	
24	Regulus W.	104 22 24	2911	105 54 29	2923	107 26 18	2935	108 57 53	2946	
	Spica W.	50 21 54	2916	51 53 52	2928	53 25 35	2939	54 57 5	2950	
	α Aquilæ E.	57 4 57	4013	55 53 30	4065	54 42 54	4120	53 33 12	4180	
	Venus E.	66 39 36	3324	65 15 53	3337	63 52 24	3350	62 29 10	3361	
	Fomalhaut E.	78 29 48	3235	77 4 20	3250	75 39 10	3266	74 14 19	3282	
	SUN E.	110 58 33	3282	109 34 1	3294	108 9 43	3307	106 45 40	3319	
25	Spica W.	62 31 15	2998	64 1 30	3006	65 31 35	3015	67 1 29	3022	
	Antares W.	16 37 11	2997	18 7 27	3005	19 37 34	3013	21 7 31	3021	
	Venus E.	55 36 18	3416	54 14 20	3425	52 52 32	3434	51 30 54	3443	
	Fomalhaut E.	67 14 49	3365	65 51 52	3383	64 29 16	3400	63 7 0	3418	
	SUN E.	99 48 42	3372	98 25 53	3382	97 3 16	3390	95 40 48	3399	
26	Spica W.	74 28 56	3052	75 58 4	3057	77 27 6	3061	78 56 4	3065	
	Antares W.	28 35 9	3050	30 4 20	3055	31 33 25	3059	33 2 25	3062	
	Venus E.	44 44 55	3477	43 24 5	3482	42 3 21	3487	40 42 42	3490	
	Fomalhaut E.	56 20 54	3517	55 0 48	3539	53 41 7	3561	52 21 50	3585	
	SUN E.	88 50 39	3432	87 28 59	3438	86 7 25	3442	84 45 56	3446	
27	Spica W.	86 19 54	3076	87 48 33	3077	89 17 11	3077	90 45 49	3077	
	Antares W.	40 26 30	3074	41 55 12	3074	43 23 53	3074	44 52 34	3074	
	Venus E.	34 0 25	3504	32 40 5	3505	31 19 46	3506	29 59 28	3505	
	Fomalhaut E.	45 52 37	3732	44 36 24	3769	43 20 49	3809	42 5 56	3852	
	SUN E.	77 59 28	3459	76 38 18	3460	75 17 9	3460	73 56 0	3461	
28	Spica W.	98 9 12	3069	99 38 0	3066	101 6 51	3063	102 35 46	3060	
	Antares W.	52 16 13	3066	53 45 4	3064	55 13 58	3060	56 42 57	3056	
	Fomalhaut E.	36 4 1	4146	34 54 44	4228	33 46 44	4319	32 40 9	4422	
	SUN E.	67 10 6	3453	65 48 49	3450	64 27 29	3447	63 6 5	3443	
29	Antares W.	64 9 8	3031	65 38 42	3026	67 8 23	3018	68 38 13	3012	
	SUN E.	56 17 52	3417	54 55 55	3411	53 33 51	3404	52 11 39	3398	
30	Antares W.	76 9 36	2973	77 40 22	2964	79 11 20	2955	80 42 29	2946	
	SUN E.	45 18 38	3359	43 55 34	3351	42 32 21	3341	41 8 57	3332	
31	Antares W.	88 21 13	2897	89 53 36	2887	91 26 12	2876	92 59 2	2866	
	α Aquilæ W.	44 54 14	4605	45 56 34	4506	47 0 21	4413	48 5 30	4328	
	SUN E.	34 9 23	3287	32 44 56	3278	31 20 19	3269	29 55 31	3260	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
21	Venus E.	95 38 33	2999	94 8 19	3017	92 38 27	3035	91 8 58	3053
22	Saturn W.	107 47 54	2736	109 23 46	2751	110 59 18	2767	112 34 29	2782
	Regulus W.	85 35 4	2744	87 10 46	2759	88 46 7	2775	90 21 8	2790
	Spica W.	31 36 25	2754	33 11 53	2769	34 47 1	2783	36 21 51	2798
	α Aquila E.	72 19 11	3540	70 59 31	3571	69 40 25	3603	68 21 54	3636
	Venus E.	83 46 55	3140	82 19 34	3157	80 52 33	3173	79 25 51	3190
	Sun E.	128 15 21	3101	126 47 13	3118	125 19 26	3134	123 51 58	3151
23	Regulus W.	98 11 27	2861	99 44 36	2873	101 17 29	2887	102 50 5	2900
	Spica W.	44 11 24	2866	45 44 26	2880	47 17 11	2892	48 49 40	2904
	α Aquila E.	61 58 45	3826	60 44 10	3869	59 30 19	3914	58 17 14	3962
	Venus E.	72 17 13	3268	70 52 24	3282	69 27 51	3297	68 3 36	3310
	Fomalhaut E.	84 14 47	3172	82 48 4	3188	81 21 40	3204	79 55 35	3219
	Sun E.	116 39 23	3227	115 13 46	3241	113 48 25	3255	112 23 21	3269
24	Regulus W.	110 29 14	2957	112 0 21	2967	113 31 16	2977	115 1 58	2985
	Spica W.	56 28 20	2961	57 59 22	2970	59 30 12	2980	61 0 49	2989
	α Aquila E.	52 24 27	4244	51 16 42	4310	50 9 59	4380	49 4 20	4457
	Venus E.	61 6 9	3374	59 43 23	3385	58 20 49	3396	56 58 28	3406
	Fomalhaut E.	72 49 47	3299	71 25 34	3314	70 1 39	3331	68 38 4	3349
	Sun E.	105 21 51	3331	103 58 15	3342	102 34 52	3352	101 11 41	3363
25	Spica W.	68 31 15	3029	70 0 52	3036	71 30 20	3042	72 59 41	3047
	Antares W.	22 37 18	3027	24 6 57	3034	25 36 28	3039	27 5 52	3045
	Venus E.	50 9 26	3450	48 48 6	3458	47 26 55	3465	46 5 52	3471
	Fomalhaut E.	61 45 4	3437	60 23 29	3455	59 2 15	3475	57 41 23	3496
	Sun E.	94 18 30	3407	92 56 21	3414	91 34 20	3420	90 12 26	3426
26	Spica W.	80 24 56	3068	81 53 45	3070	83 22 31	3073	84 51 13	3074
	Antares W.	34 31 21	3066	36 0 12	3068	37 29 1	3070	38 57 47	3073
	Venus E.	39 22 7	3495	38 1 37	3498	36 41 10	3501	35 20 47	3502
	Fomalhaut E.	51 3 0	3611	49 44 38	3639	48 26 46	3668	47 9 25	3699
	Sun E.	83 24 31	3450	82 3 11	3453	80 41 54	3455	79 20 40	3457
27	Spica W.	92 14 27	3076	93 43 6	3075	95 11 46	3074	96 40 28	3072
	Antares W.	46 21 15	3073	47 49 57	3072	49 18 41	3071	50 47 26	3069
	Venus E.	28 39 9	3505	27 18 50	3503	25 58 29	3502	24 38 7	3500
	Fomalhaut E.	40 51 47	3899	39 38 26	3951	38 25 58	4010	37 14 28	4074
	Sun E.	72 34 52	3460	71 13 43	3458	69 52 32	3457	68 31 20	3455
28	Spica W.	104 4 45	3055	105 33 50	3051	107 3 0	3045	108 32 17	3040
	Antares W.	58 12 0	3052	59 41 8	3047	61 10 22	3043	62 39 42	3038
	Fomalhaut E.	31 35 8	4541	30 31 52	4677	29 30 33	4832	28 31 23	5012
	Sun E.	61 44 37	3439	60 23 4	3434	59 1 26	3429	57 39 42	3423
29	Antares W.	70 8 11	3005	71 38 18	2997	73 8 34	2989	74 39 0	2981
	Sun E.	50 49 20	3391	49 26 53	3383	48 4 17	3375	46 41 32	3367
30	Antares W.	82 13 49	2937	83 45 21	2927	85 17 6	2917	86 49 3	2907
	Sun E.	39 45 23	3324	38 21 39	3314	36 57 44	3306	35 33 39	3296
31	Antares W.	94 32 5	2854	96 5 23	2843	97 38 55	2832	99 12 41	2821
	α Aquila W.	49 11 57	4250	50 19 36	4176	51 28 25	4107	52 38 20	4043
	Sun E.	28 30 33	3253	27 5 26	3244	25 40 9	3237	24 14 44	3231

CONFIGURATIONS OF THE SATELLITES OF JUPITER,

At 8^h 30^m, MEAN TIME.

Day of the Month.	West.	East.
1	4 3 1	2
2	4 3	1
3	4 2 3 1	
4	2 4	1 3
5	1	4 2 3
6		2 1 4 3
7		2 1 4
8		3 1 2 4
9		3 1 4
10		3 2 1 4
11		2 1 3 4
12		1 2 3 4
13	1	2 4 3
14		2 4 1 3
15		4 3 1 2
16		4 3 1
17		4 3 2 1
18		4 2 1 3
19		4 1 2 3
20		4 1 3 2
21	1	2 4 3
22		3 1 4
23		3 1 2 4
24		3 2 1 4
25		2 3 1 4
26		1 4 3
27		2 1 3 4
28		2 1 3 4
29	2	3 1 4
30		3 4 1 2
31		3 4 1

This Table represents, at 8^h 30^m after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is *on* the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 6 ^h 49 ^m 53 ^s	From Mean Noon of January 1.		
	At Mean Midnight, Logarithm of						Days.	Day of the Year.	Fraction of the Year.*
	A	B	C	D					
1	-1.2486	+0.8251	+9.5479	-0.9187	h m s 1 24 43.36	343	59	.1615	
2	1.2511	0.8024	9.5507	0.9191	1 20 47.45	344	60	.1643	
3	1.2535	0.7785	9.5535	0.9195	1 16 51.54	345	61	.1670	
4	-1.2558	+0.7530	+9.5563	-0.9198	1 12 55.63	346	62	.1698	
5	1.2579	0.7257	9.5590	0.9201	1 8 59.72	347	63	.1725	
6	1.2599	0.6966	9.5617	0.9204	1 5 3.81	348	64	.1752	
7	-1.2617	+0.6651	+9.5643	-0.9206	1 1 7.91	349	65	.1780	
8	1.2634	0.6312	9.5669	0.9208	0 57 12.00	350	66	.1807	
9	1.2650	0.5942	9.5695	0.9210	0 53 16.09	351	67	.1834	
10	-1.2664	+0.5536	+9.5721	-0.9211	0 49 20.18	352	68	.1862	
11	1.2677	0.5088	9.5746	0.9212	0 45 24.28	353	69	.1889	
12	1.2688	0.4587	9.5770	0.9213	0 41 28.37	354	70	.1917	
13	-1.2698	+0.4019	+9.5795	-0.9213	0 37 32.46	355	71	.1944	
14	1.2707	0.3365	9.5820	0.9213	0 33 36.55	356	72	.1971	
15	1.2714	0.2593	9.5844	0.9213	0 29 40.65	357	73	.1999	
16	-1.2720	+0.1653	+9.5869	-0.9212	0 25 44.74	358	74	.2026	
17	1.2725	0.0450	9.5892	0.9211	0 21 48.83	359	75	.2053	
18	1.2728	9.8780	9.5916	0.9210	0 17 52.92	360	76	.2081	
19	-1.2731	+9.6032	+9.5940	-0.9208	0 13 57.02	361	77	.2108	
20	1.2731	+8.6719	9.5963	0.9206	0 10 1.11	362	78	.2136	
21	1.2731	-9.4868	9.5987	0.9204	0 6 5.20	363	79	.2163	
22	-1.2729	-9.8197	+9.6010	-0.9201	{ 0 0 0 0 }	364	80	.2190	
23	1.2726	0.0058	9.6033	0.9198	23 54 17.48	0	81	.2218	
24	1.2722	0.1355	9.6056	0.9194	23 50 21.57	1	82	.2245	
25	-1.2716	-0.2351	+9.6079	-0.9190	23 46 25.66	2	83	.2272	
26	1.2709	0.3159	9.6102	0.9186	23 42 29.75	3	84	.2300	
27	1.2701	0.3839	9.6125	0.9182	23 38 33.84	4	85	.2327	
28	-1.2691	-0.4425	+9.6148	-0.9177	23 34 37.94	5	86	.2355	
29	1.2680	0.4940	9.6171	0.9172	23 30 42.03	6	87	.2382	
30	1.2668	0.5399	9.6193	0.9166	23 26 46.12	7	88	.2409	
31	1.2654	0.5813	9.6216	0.9160	23 22 50.21	8	89	.2437	
32	-1.2640	-0.6189	+9.6239	-0.9154	23 18 54.31	9	90	.2464	

* Add .0017 if Fraction be required for the time 4, see page 363.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.		subt. from Apparent Time.	
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Frid.	1	0 41 19.24	9.100	N. 4 27 0.1	57.82	1 4.48	4 2.68	0.754
Sat.	2	0 44 57.65	9.105	4 50 7.7	57.60	1 4.50	3 44.59	0.749
Sun.	3	0 48 36.18	9.111	5 13 10.2	57.37	1 4.52	3 26.62	0.743
Mon.	4	0 52 14.85	9.118	5 36 7.1	57.12	1 4.54	3 8.78	0.736
Tues.	5	0 55 53.68	9.125	5 58 58.0	56.86	1 4.56	2 51.10	0.729
Wed.	6	0 59 32.68	9.133	6 21 42.7	56.58	1 4.59	2 33.60	0.721
Thur.	7	1 3 11.86	9.141	6 44 20.8	56.29	1 4.62	2 16.28	0.713
Frid.	8	1 6 51.25	9.150	7 6 51.8	55.99	1 4.66	1 59.16	0.704
Sat.	9	1 10 30.85	9.160	7 29 15.4	55.67	1 4.69	1 42.25	0.695
Sun.	10	1 14 10.69	9.170	7 51 31.4	55.33	1 4.73	1 25.57	0.684
Mon.	11	1 17 50.78	9.181	8 13 39.4	54.98	1 4.77	1 9.16	0.673
Tues.	12	1 21 31.13	9.193	8 35 39.0	54.62	1 4.82	0 53.01	0.661
Wed.	13	1 25 11.78	9.206	8 57 30.0	54.25	1 4.86	0 37.14	0.649
Thur.	14	1 28 52.72	9.219	9 19 11.9	53.86	1 4.91	0 21.57	0.635
Frid.	15	1 32 33.99	9.233	9 40 44.4	53.46	1 4.96	0 6.32	0.621
Sat.	16	1 36 15.59	9.249	10 2 7.5	53.05	1 5.02	0 8.58	0.606
Sun.	17	1 39 57.56	9.265	10 23 20.7	52.62	1 5.07	0 23.14	0.590
Mon.	18	1 43 39.91	9.281	10 44 23.6	52.18	1 5.13	0 37.31	0.574
Tues.	19	1 47 22.65	9.298	11 5 15.9	51.73	1 5.19	0 51.07	0.557
Wed.	20	1 51 5.81	9.316	11 25 57.5	51.27	1 5.25	1 4.43	0.539
Thur.	21	1 54 49.41	9.335	11 46 27.9	50.79	1 5.31	1 17.36	0.520
Frid.	22	1 58 33.45	9.354	12 6 46.8	50.29	1 5.37	1 29.84	0.501
Sat.	23	2 2 17.95	9.374	12 26 54.0	49.79	1 5.44	1 41.86	0.481
Sun.	24	2 6 2.93	9.394	12 46 49.0	49.28	1 5.51	1 53.40	0.461
Mon.	25	2 9 48.40	9.415	13 6 31.5	48.75	1 5.58	2 4.46	0.440
Tues.	26	2 13 34.37	9.436	13 26 1.4	48.20	1 5.65	2 15.02	0.419
Wed.	27	2 17 20.85	9.458	13 45 18.0	47.63	1 5.72	2 25.06	0.397
Thur.	28	2 21 7.85	9.480	14 4 21.2	47.06	1 5.79	2 34.58	0.375
Frid.	29	2 24 55.38	9.502	14 23 10.7	46.47	1 5.87	2 43.58	0.353
Sat.	30	2 28 43.44	9.525	14 41 45.9	45.87	1 5.94	2 52.06	0.331
Sun.	31	2 32 32.04		N. 15 0 6.7		1 6.02	3 0.00	

* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subt. from	Sidereal Time.
		<i>Apparent</i> Right Ascension.	<i>Apparent</i> Declination.	Semidiam.*	<i>added to</i> Mean Time.	
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Frid.	1	0 41 18.63	N. 4 26 56.3	16 1.9	4 2.74	0 37 15.89
Sat.	2	0 44 57.08	4 50 4.2	16 1.6	3 44.64	0 41 12.44
Sun.	3	0 48 35.66	5 13 6.9	16 1.3	3 26.66	0 45 9.00
Mon.	4	0 52 14.37	5 36 4.1	16 1.0	3 8.82	0 49 5.55
Tues.	5	0 55 53.24	5 58 55.3	16 0.8	2 51.13	0 53 2.11
Wed.	6	0 59 32.29	6 21 40.3	16 0.5	2 33.63	0 56 58.66
Thur.	7	1 3 11.52	6 44 18.7	16 0.2	2 16.31	1 0 55.21
Frid.	8	1 6 50.94	7 6 49.9	16 0.0	1 59.18	1 4 51.77
Sat.	9	1 10 30.59	7 29 13.8	15 59.7	1 42.27	1 8 48.32
Sun.	10	1 14 10.47	7 51 30.1	15 59.4	1 25.59	1 12 44.88
Mon.	11	1 17 50.60	8 13 38.3	15 59.2	1 9.17	1 16 41.43
Tues.	12	1 21 31.00	8 35 38.2	15 58.9	0 53.02	1 20 37.98
Wed.	13	1 25 11.68	8 57 29.4	15 58.6	0 37.14	1 24 34.54
Thur.	14	1 28 52.66	9 19 11.5	15 58.4	0 21.57	1 28 31.09
Frid.	15	1 32 33.97	9 40 44.4	15 58.1	0 6.32	1 32 27.65
Sat.	16	1 36 15.62	10 2 7.7	15 57.9	0 8.58	1 36 24.20
Sun.	17	1 39 57.62	10 23 21.0	15 57.6	0 23.14	1 40 20.76
Mon.	18	1 43 40.00	10 44 24.1	15 57.3	0 37.31	1 44 17.31
Tues.	19	1 47 22.78	11 5 16.7	15 57.0	0 51.09	1 48 13.87
Wed.	20	1 51 5.98	11 25 58.4	15 56.8	1 4.44	1 52 10.42
Thur.	21	1 54 49.61	11 46 29.0	15 56.5	1 17.37	1 56 6.98
Frid.	22	1 58 33.68	12 6 48.1	15 56.3	1 29.85	2 0 3.53
Sat.	23	2 2 18.22	12 26 55.4	15 56.0	1 41.87	2 4 0.09
Sun.	24	2 6 3.23	12 46 50.5	15 55.8	1 53.41	2 7 56.64
Mon.	25	2 9 48.72	13 6 33.2	15 55.5	2 4.47	2 11 53.20
Tues.	26	2 13 34.72	13 26 3.2	15 55.3	2 15.03	2 15 49.75
Wed.	27	2 17 21.23	13 45 20.0	15 55.0	2 25.08	2 19 46.31
Thur.	28	2 21 8.26	14 4 23.3	15 54.8	2 34.60	2 23 42.86
Frid.	29	2 24 55.81	14 23 12.8	15 54.5	2 43.60	2 27 39.42
Sat.	30	2 28 43.90	14 41 48.1	15 54.2	2 52.07	2 31 35.97
Sun.	31	2 32 32.52	N. 15 0 9.0	15 54.0	3 0.01	2 35 32.53

* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	11 14 8.0	N. 0.51	9.9999775	15 11.1	15 15.6	55 36.1	55 52.4
2	12 13 16.7	0.62	0.0001030	15 20.1	15 24.8	56 9.1	56 26.1
3	13 12 23.4	0.72	0.0002278	15 29.4	15 33.9	56 42.9	56 59.4
4	14 11 28.0	0.79	0.0003520	15 38.3	15 42.5	57 15.5	57 30.8
5	15 10 30.5	0.83	0.0004754	15 46.4	15 50.2	57 45.4	57 59.0
6	16 9 30.8	0.85	0.0005982	15 53.6	15 56.8	58 11.6	58 23.2
7	17 8 28.9	0.83	0.0007203	15 59.6	16 2.2	58 33.7	58 43.1
8	18 7 24.7	0.78	0.0008417	16 4.5	16 6.5	58 51.4	58 58.8
9	19 6 18.2	0.71	0.0009625	16 8.2	16 9.6	59 5.1	59 10.3
10	20 5 9.5	0.61	0.0010829	16 10.8	16 11.6	59 14.5	59 17.5
11	21 3 58.5	0.49	0.0012029	16 12.1	16 12.2	59 19.2	59 19.7
12	22 2 45.2	0.36	0.0013226	16 11.9	16 11.3	59 18.7	59 16.3
13	23 1 29.7	0.22	0.0014422	16 10.1	16 8.5	59 12.1	59 6.2
14	24 0 11.9	N. 0.08	0.0015618	16 6.4	16 3.8	58 58.5	58 48.9
15	24 58 51.9	S. 0.04	0.0016814	16 0.7	15 57.1	58 37.6	58 24.4
16	25 57 29.9	0.15	0.0018009	15 53.1	15 48.6	58 9.7	57 53.4
17	26 56 5.9	0.24	0.0019203	15 43.9	15 38.8	57 35.9	57 17.4
18	27 54 39.9	0.30	0.0020396	15 33.6	15 28.3	56 58.3	56 38.9
19	28 53 12.1	0.34	0.0021588	15 23.0	15 17.8	56 19.5	56 0.6
20	29 51 42.5	0.35	0.0022780	15 12.9	15 8.1	55 42.4	55 25.1
21	30 50 11.3	0.33	0.0023970	15 3.8	14 59.9	55 9.2	54 55.0
22	31 48 38.3	0.27	0.0025155	14 56.6	14 53.8	54 42.7	54 32.5
23	32 47 3.7	0.19	0.0026335	14 51.6	14 50.1	54 24.6	54 19.0
24	33 45 27.5	S. 0.08	0.0027509	14 49.3	14 49.1	54 16.0	54 15.5
25	34 43 49.7	N. 0.03	0.0028675	14 49.7	14 51.0	54 17.7	54 22.5
26	35 42 10.4	0.17	0.0029831	14 53.0	14 55.7	54 29.7	54 39.5
27	36 40 29.6	0.30	0.0030977	14 59.0	15 2.9	54 51.6	55 5.8
28	37 38 47.2	0.42	0.0032110	15 7.3	15 12.2	55 22.0	55 39.9
29	38 37 3.3	0.54	0.0033229	15 17.4	15 23.0	55 59.1	56 19.5
30	39 35 17.7	0.63	0.0034334	15 28.7	15 34.5	56 40.4	57 1.7
31	40 33 30.5	N. 0.70	0.0035424	15 40.3	15 45.9	57 22.9	57 43.5

MEAN TIME.

THE MOON'S

Day of the Week.	Day of the Month.						
		Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
		° ' "	° ' "	° ' "	° ' "	d	h m
Frid.	1	348 28 44.2	354 46 9.3	N. 1 44 43.0	N. 2 16 3.6	27.7	23 17.3
Sat.	2	1 7 48.2	7 33 44.9	2 46 1.6	3 14 10.9	28.7	0
Sun.	3	14 3 58.9	20 38 24.8	3 40 5.6	4 3 20.5	0.1	0 0.9
Mon.	4	27 16 52.9	33 59 9.8	4 23 31.7	4 40 15.8	1.1	0 47.2
Tues.	5	40 44 59.1	47 34 2.0	4 53 13.5	5 2 8.2	2.1	1 37.2
Wed.	6	54 25 58.1	61 20 26.7	5 6 46.2	5 6 58.3	3.1	2 31.5
Thurs.	7	68 17 7.0	75 15 39.4	5 2 40.2	4 53 52.0	4.1	3 30.0
Frid.	8	82 15 45.2	89 17 7.9	4 40 38.8	4 23 9.8	5.1	4 31.4
Sat.	9	96 19 32.8	103 22 47.2	4 1 39.1	3 36 25.3	6.1	5 33.3
Sun.	10	110 26 39.8	117 31 0.7	3 7 50.7	2 36 21.0	7.1	6 33.2
Mon.	11	124 35 39.6	131 40 27.2	2 2 26.1	1 26 37.7	8.1	7 29.8
Tues.	12	138 45 12.8	145 49 43.8	N. 0 49 30.0	N. 0 11 39.1	9.1	8 22.6
Wed.	13	152 53 45.9	159 57 2.5	S. 0 26 18.0	S. 1 3 45.0	10.1	9 12.3
Thurs.	14	166 59 13.5	173 59 57.2	1 40 4.8	2 14 43.5	11.1	10 0.1
Frid.	15	180 58 49.6	187 55 25.1	2 47 8.5	3 16 50.8	12.1	10 47.2
Sat.	16	194 49 17.3	201 40 0.2	3 43 25.7	4 6 32.2	13.1	11 34.6
Sun.	17	208 27 9.3	215 10 22.7	4 25 54.8	4 41 22.6	14.1	12 23.4
Mon.	18	221 49 21.9	228 23 52.7	4 52 49.6	5 0 13.6	15.1	13 14.1
Tues.	19	234 53 46.3	241 18 59.1	5 3 37.9	5 3 7.8	16.1	14 6.5
Wed.	20	247 39 33.6	253 55 38.0	4 58 52.3	4 51 2.4	17.1	15 0.0
Thurs.	21	260 7 26.1	266 15 17.1	4 39 50.7	4 25 31.0	18.1	15 53.3
Frid.	22	272 19 34.5	278 20 46.4	4 8 18.2	3 48 27.0	19.1	16 45.1
Sat.	23	284 19 24.3	290 16 2.7	3 26 12.8	3 1 50.4	20.1	17 34.6
Sun.	24	296 11 18.6	302 5 50.6	2 35 35.1	2 7 42.3	21.1	18 21.3
Mon.	25	308 0 19.2	313 55 24.8	1 38 27.2	1 8 5.5	22.1	19 5.6
Tues.	26	319 51 48.2	325 50 9.8	S. 0 36 53.3	S. 0 5 7.5	23.1	19 47.9
Wed.	27	331 51 8.7	337 55 22.2	N. 0 26 54.5	N. 0 58 53.7	24.1	20 49.3
Thurs.	28	344 3 24.9	350 15 47.8	1 30 30.5	2 1 22.7	25.1	21 10.9
Frid.	29	356 32 57.7	2 55 16.1	2 31 8.3	2 59 22.5	26.1	21 53.7
Sat.	30	9 22 58.2	15 56 12.4	3 25 40.6	3 49 36.9	27.1	22 39.1
Sun.	31	22 34 59.9	29 19 13.6	N. 4 10 45.2	N. 4 28 40.6	28.1	23 28.2

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 1.				SUNDAY 3.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	23 14 54.01	S. 2 57 15.2	146.70	0	0 46 1.09	N. 8 55 52.8	146.31
1	23 16 45.15	2 42 35.0	146.93	1	0 47 59.57	9 10 30.7	146.03
2	23 18 36.35	2 27 53.4	147.15	2	0 49 58.31	9 25 6.9	145.73
3	23 20 27.60	2 13 10.5	147.36	3	0 51 57.32	9 39 41.3	145.41
4	23 22 18.91	1 58 26.3	147.56	4	0 53 56.60	9 54 13.8	145.09
5	23 24 10.28	1 43 40.9	147.76	5	0 55 56.14	10 8 44.3	144.75
6	23 26 1.72	1 28 54.3	147.94	6	0 57 55.97	10 23 12.9	144.40
7	23 27 53.23	1 14 6.6	148.12	7	0 59 56.08	10 37 39.3	144.03
8	23 29 44.82	0 59 17.9	148.28	8	1 1 56.47	10 52 3.5	143.65
9	23 31 36.49	0 44 28.2	148.44	9	1 3 57.15	11 6 25.5	143.26
10	23 33 28.25	0 29 37.5	148.58	10	1 5 58.12	11 20 45.1	142.86
11	23 35 20.09	S. 0 14 46.0	148.72	11	1 7 59.39	11 35 2.2	142.44
12	23 37 12.03	N. 0 0 6.4	148.85	12	1 10 0.97	11 49 16.9	142.01
13	23 39 4.07	0 14 59.5	148.97	13	1 12 2.85	12 3 29.0	141.56
14	23 40 56.21	0 29 53.3	149.07	14	1 14 5.04	12 17 38.4	141.10
15	23 42 48.45	0 44 47.8	149.17	15	1 16 7.54	12 31 45.0	140.63
16	23 44 40.81	0 59 42.9	149.26	16	1 18 10.35	12 45 48.8	140.14
17	23 46 33.28	1 14 38.5	149.34	17	1 20 13.50	12 59 49.7	139.63
18	23 48 25.87	1 29 34.5	149.40	18	1 22 16.96	13 13 47.5	139.12
19	23 50 18.59	1 44 31.0	149.46	19	1 24 20.75	13 27 42.2	138.59
20	23 52 11.44	1 59 27.8	149.51	20	1 26 24.88	13 41 33.8	138.04
21	23 54 4.41	2 14 24.8	149.54	21	1 28 29.35	13 55 22.0	137.48
22	23 55 57.53	2 29 22.1	149.57	22	1 30 34.15	14 9 6.9	136.90
23	23 57 50.78	N. 2 44 19.6	149.58	23	1 32 39.30	N. 14 22 48.4	136.31
SATURDAY 2.				MONDAY 4.			
0	23 59 44.18	N. 2 59 17.1	149.59	0	1 34 44.79	N. 14 36 26.3	135.70
1	0 1 37.73	3 14 14.7	149.58	1	1 36 50.64	14 50 0.6	135.08
2	0 3 31.44	3 29 12.2	149.56	2	1 38 56.83	15 3 31.1	134.45
3	0 5 25.30	3 44 9.6	149.54	3	1 41 3.39	15 16 57.8	133.80
4	0 7 19.33	3 59 6.8	149.50	4	1 43 10.31	15 30 20.7	133.13
5	0 9 13.53	4 14 3.8	149.45	5	1 45 17.60	15 43 39.5	132.45
6	0 11 7.90	4 29 0.6	149.39	6	1 47 25.25	15 56 54.2	131.76
7	0 13 2.45	4 43 56.9	149.32	7	1 49 33.27	16 10 4.8	131.05
8	0 14 57.18	4 58 52.8	149.23	8	1 51 41.66	16 23 11.1	130.32
9	0 16 52.09	5 13 48.2	149.13	9	1 53 50.44	16 36 13.0	129.58
10	0 18 47.20	5 28 43.1	149.03	10	1 55 59.59	16 49 10.5	128.82
11	0 20 42.50	5 43 37.4	148.92	11	1 58 9.12	17 2 3.5	128.05
12	0 22 38.00	5 58 30.9	148.79	12	2 0 19.04	17 14 51.8	127.26
13	0 24 33.70	6 13 23.7	148.65	13	2 2 29.35	17 27 35.4	126.45
14	0 26 29.61	6 28 15.6	148.50	14	2 4 40.04	17 40 14.1	125.63
15	0 28 25.73	6 43 6.6	148.33	15	2 6 51.13	17 52 48.0	124.80
16	0 30 22.07	6 57 56.6	148.16	16	2 9 2.62	18 5 16.8	123.95
17	0 32 18.63	7 12 45.6	147.97	17	2 11 14.50	18 17 40.5	123.08
18	0 34 15.41	7 27 33.4	147.77	18	2 13 26.79	18 29 59.0	122.19
19	0 36 12.42	7 42 20.1	147.56	19	2 15 39.47	18 42 12.2	121.29
20	0 38 9.67	7 57 5.5	147.33	20	2 17 52.56	18 54 20.0	120.38
21	0 40 7.16	8 11 49.5	147.10	21	2 20 6.05	19 6 22.2	119.45
22	0 42 4.89	8 26 32.1	146.85	22	2 22 19.95	19 18 18.9	118.50
23	0 44 2.86	8 41 13.2	146.59	23	2 24 34.26	19 30 10.0	117.53
24	0 46 1.09	N. 8 55 52.8		24	2 26 48.99	N. 19 41 55.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
TUESDAY 5.				THURSDAY 7.			
0	2 26 48.99	N. 19 41 55.2	116.55	0	4 22 33.32	N. 26 41 6.2	50.91
1	2 29 4.13	19 53 34.5	115.56	1	4 25 6.96	26 46 11.7	49.19
2	2 31 19.67	20 5 7.9	114.54	2	4 27 40.89	26 51 6.9	47.47
3	2 33 35.64	20 16 35.2	113.51	3	4 30 15.09	26 55 51.7	45.74
4	2 35 52.02	20 27 56.3	112.47	4	4 32 49.57	27 0 26.2	44.00
5	2 38 8.82	20 39 11.1	111.40	5	4 35 24.31	27 4 50.2	42.24
6	2 40 26.03	20 50 19.6	110.32	6	4 37 59.31	27 9 3.7	40.48
7	2 42 43.66	21 1 21.6	109.23	7	4 40 34.57	27 13 6.6	38.71
8	2 45 1.71	21 12 17.0	108.12	8	4 43 10.06	27 16 58.9	36.93
9	2 47 20.18	21 23 5.7	106.99	9	4 45 45.79	27 20 40.5	35.14
10	2 49 39.07	21 33 47.7	105.84	10	4 48 21.74	27 24 11.3	33.34
11	2 51 58.38	21 44 22.8	104.68	11	4 50 57.91	27 27 31.4	31.53
12	2 54 18.10	21 54 50.9	103.51	12	4 53 34.29	27 30 40.6	29.72
13	2 56 38.25	22 5 12.0	102.31	13	4 56 10.87	27 33 38.9	27.90
14	2 58 58.81	22 15 25.9	101.10	14	4 58 47.64	27 36 26.3	26.07
15	3 1 19.80	22 25 32.5	99.87	15	5 1 24.60	27 39 2.8	24.23
16	3 3 41.20	22 35 31.8	98.63	16	5 4 1.73	27 41 28.2	22.39
17	3 6 3.02	22 45 23.6	97.37	17	5 6 39.03	27 43 42.5	20.54
18	3 8 25.25	22 55 7.9	96.10	18	5 9 16.48	27 45 45.8	18.68
19	3 10 47.90	23 4 44.5	94.81	19	5 11 54.08	27 47 37.9	16.82
20	3 13 10.96	23 14 13.4	93.50	20	5 14 31.82	27 49 18.9	14.96
21	3 15 34.44	23 23 34.4	92.18	21	5 17 9.69	27 50 48.7	13.09
22	3 17 58.32	23 32 47.5	90.84	22	5 19 47.67	27 52 7.2	11.22
23	3 20 22.61	N. 23 41 52.6	89.49	23	5 22 25.77	N. 27 53 14.5	9.34
WEDNESDAY 6.				FRIDAY 8.			
0	3 22 47.31	N. 23 50 49.5	88.12	0	5 25 3.97	N. 27 54 10.6	7.45
1	3 25 12.41	23 59 38.2	86.73	1	5 27 42.26	27 54 55.3	5.57
2	3 27 37.92	24 8 18.6	85.33	2	5 30 20.63	27 55 28.8	3.68
3	3 30 3.82	24 16 50.7	83.91	3	5 32 59.07	27 55 50.9	1.79
4	3 32 30.12	24 25 14.2	82.48	4	5 35 37.57	27 56 1.6	0.09
5	3 34 56.82	24 33 29.1	81.04	5	5 38 16.13	27 56 1.0	1.99
6	3 37 33.90	24 41 35.3	79.57	6	5 40 54.73	27 55 49.1	3.88
7	3 39 51.37	24 49 32.8	78.10	7	5 43 33.35	27 55 25.8	5.78
8	3 42 19.23	24 57 21.4	76.61	8	5 46 12.00	27 54 51.1	7.67
9	3 44 47.46	25 5 1.1	75.10	9	5 48 50.67	27 54 5.0	9.57
10	3 47 16.07	25 12 31.7	73.58	10	5 51 29.33	27 53 7.6	11.47
11	3 49 45.05	25 19 53.3	72.05	11	5 54 7.99	27 51 58.7	13.36
12	3 52 14.39	25 27 5.6	70.50	12	5 56 46.64	27 50 38.5	15.26
13	3 54 44.10	25 34 8.6	68.94	13	5 59 25.26	27 49 6.9	17.15
14	3 57 14.16	25 41 2.3	67.36	14	6 2 3.84	27 47 24.0	19.05
15	3 59 44.58	25 47 46.5	65.78	15	6 4 42.38	27 45 29.7	20.93
16	4 2 15.35	25 54 21.2	64.18	16	6 7 20.86	27 43 24.0	22.82
17	4 4 46.46	26 0 46.3	62.56	17	6 9 59.28	27 41 7.1	24.70
18	4 7 17.91	26 7 1.7	60.93	18	6 12 37.63	27 38 38.8	26.58
19	4 9 49.68	26 13 7.3	59.29	19	6 15 15.89	27 35 59.3	28.46
20	4 12 21.79	26 19 3.0	57.64	20	6 17 54.06	27 33 8.5	30.33
21	4 14 54.21	26 24 48.9	55.97	21	6 20 32.13	27 30 6.4	32.20
22	4 17 26.94	26 30 24.7	54.30	22	6 23 10.09	27 26 53.2	34.07
23	4 19 59.08	26 35 50.5	52.61	23	6 25 47.93	27 23 28.8	35.92
24	4 22 33.32	N. 26 41 6.2		24	6 28 25.65	N. 27 19 53.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
SATURDAY 9.				MONDAY 11.			
0	^h 6 ^m 28 ^s 25.65	N. 27 19 53.2	37.78	0	^h 8 29 50.68	N. 21 6 39.5	114.60
1	6 31 3.23	27 16 6.5	39.63	1	8 32 14.63	20 55 11.9	115.86
2	6 33 40.66	27 12 8.7	41.47	2	8 34 38.22	20 43 36.7	117.11
3	6 36 17.94	27 7 59.9	43.30	3	8 37 1.46	20 31 54.0	118.34
4	6 38 55.06	27 3 40.1	45.13	4	8 39 24.34	20 20 4.0	119.55
5	6 41 32.01	26 59 9.3	46.95	5	8 41 46.86	20 8 6.7	120.75
6	6 44 8.77	26 54 27.6	48.76	6	8 44 9.03	19 56 2.1	121.93
7	6 46 45.36	26 49 35.0	50.56	7	8 46 30.85	19 43 50.5	123.10
8	6 49 21.75	26 44 31.6	52.36	8	8 48 52.31	19 31 31.9	124.25
9	6 51 57.93	26 39 17.4	54.15	9	8 51 13.42	19 19 6.4	125.38
10	6 54 33.91	26 33 52.5	55.93	10	8 53 34.18	19 6 34.1	126.50
11	6 57 9.67	26 28 16.9	57.70	11	8 55 54.59	18 53 55.1	127.60
12	6 59 45.21	26 22 30.7	59.46	12	8 58 14.65	18 41 9.5	128.68
13	7 2 20.52	26 16 33.9	61.21	13	9 0 34.37	18 28 17.4	129.75
14	7 4 55.59	26 10 26.7	62.95	14	9 2 53.73	18 15 18.9	130.80
15	7 7 30.41	26 4 9.0	64.68	15	9 5 12.76	18 2 14.1	131.83
16	7 10 4.98	25 57 40.9	66.40	16	9 7 31.45	17 49 3.0	132.85
17	7 12 39.30	25 51 2.5	68.11	17	9 9 49.79	17 35 45.9	133.85
18	7 15 13.36	25 44 13.8	69.80	18	9 12 7.80	17 22 22.8	134.84
19	7 17 47.14	25 37 14.9	71.49	19	9 14 25.47	17 8 53.7	135.80
20	7 20 20.66	25 30 5.9	73.17	20	9 16 42.81	16 55 18.9	136.75
21	7 22 53.90	25 22 46.9	74.83	21	9 18 59.82	16 41 38.3	137.69
22	7 25 26.85	25 15 17.9	76.48	22	9 21 16.50	16 27 52.1	138.61
23	7 27 59.51	N. 25 7 39.0	78.12	23	9 23 32.84	N. 16 14 0.5	139.51
SUNDAY 10.				TUESDAY 12.			
0	7 30 31.87	N. 24 59 50.2	79.75	0	9 25 48.87	N. 16 0 3.4	140.39
1	7 33 3.94	24 51 51.6	81.37	1	9 28 4.58	15 46 1.0	141.26
2	7 35 35.70	24 43 43.4	82.97	2	9 30 19.97	15 31 53.4	142.11
3	7 38 7.15	24 35 25.6	84.56	3	9 32 35.05	15 17 40.7	142.95
4	7 40 38.29	24 26 58.2	86.13	4	9 34 49.82	15 3 23.0	143.76
5	7 43 9.11	24 18 21.4	87.69	5	9 37 4.27	14 49 0.4	144.57
6	7 45 39.61	24 9 35.2	89.24	6	9 39 18.43	14 34 33.0	145.35
7	7 48 9.79	24 0 39.7	90.78	7	9 41 32.28	14 20 0.9	146.10
8	7 50 39.64	23 51 35.0	92.30	8	9 43 45.84	14 5 24.1	146.89
9	7 53 9.16	23 42 21.2	93.80	9	9 45 59.11	13 50 42.8	147.62
10	7 55 38.34	23 32 58.4	95.29	10	9 48 12.08	13 35 57.1	148.38
11	7 58 7.19	23 23 26.6	96.77	11	9 50 24.77	13 21 7.1	149.08
12	8 0 35.71	23 13 45.9	98.23	12	9 52 37.17	13 6 12.9	149.78
13	8 3 3.88	23 3 56.5	99.68	13	9 54 49.30	12 51 14.6	150.38
14	8 5 31.70	22 53 58.4	101.11	14	9 57 1.15	12 36 12.2	151.04
15	8 7 59.18	22 43 51.7	102.53	15	9 59 12.73	12 21 5.9	151.68
16	8 10 26.31	22 33 36.4	103.93	16	10 1 24.05	12 5 55.8	152.30
17	8 12 53.09	22 23 12.8	105.32	17	10 3 35.10	11 50 41.9	152.98
18	8 15 19.52	22 12 40.9	106.69	18	10 5 45.89	11 35 24.4	153.56
19	8 17 45.60	22 2 0.7	108.05	19	10 7 56.43	11 20 3.4	154.07
20	8 20 11.33	21 51 12.4	109.39	20	10 10 6.71	11 4 38.9	154.63
21	8 22 36.70	21 40 16.0	110.72	21	10 12 16.75	10 49 11.1	155.15
22	8 25 1.71	21 29 11.7	112.03	22	10 14 26.55	10 33 40.0	155.74
23	8 27 26.38	21 17 59.5	113.32	23	10 16 36.11	10 18 5.8	156.21
24	8 29 50.68	N. 21 6 39.5		24	10 18 45.43	N. 10 2 28.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 13.				FRIDAY 15.			
0	10 13 45.43	N. 10 2 28.5	156.71	0	11 59 9.47	S. 2 56 44.0	162.28
1	10 20 54.53	9 46 48.2	157.18	1	12 1 13.07	3 12 57.7	162.04
2	10 23 3.40	9 31 5.1	157.64	2	12 3 16.67	3 29 9.9	161.78
3	10 25 12.06	9 15 19.2	158.09	3	12 5 20.28	3 45 20.6	161.50
4	10 27 20.50	8 59 30.6	158.52	4	12 7 23.90	4 1 29.7	161.21
5	10 29 28.72	8 43 39.4	158.94	5	12 9 27.53	4 17 37.0	160.91
6	10 31 36.74	8 27 45.8	159.33	6	12 11 31.17	4 33 42.5	160.59
7	10 33 44.56	8 11 49.8	159.72	7	12 13 34.84	4 49 46.1	160.26
8	10 35 52.18	7 55 51.4	160.08	8	12 15 38.53	5 5 47.7	159.92
9	10 37 59.61	7 39 50.9	160.43	9	12 17 42.25	5 21 47.2	159.56
10	10 40 6.85	7 23 48.3	160.77	10	12 19 46.01	5 37 44.6	159.19
11	10 42 13.91	7 7 43.6	161.09	11	12 21 49.80	5 53 39.8	158.80
12	10 44 20.79	6 51 37.1	161.39	12	12 23 53.64	6 9 32.6	158.40
13	10 46 27.49	6 35 28.8	161.67	13	12 25 57.52	6 25 23.0	157.99
14	10 48 34.03	6 19 18.7	161.95	14	12 28 1.46	6 41 11.0	157.56
15	10 50 40.40	6 3 7.0	162.20	15	12 30 5.45	6 56 56.4	157.12
16	10 52 46.61	5 46 53.7	162.45	16	12 32 9.49	7 12 39.2	156.67
17	10 54 52.67	5 30 39.0	162.67	17	12 34 13.60	7 28 19.2	156.20
18	10 56 58.57	5 14 22.9	162.88	18	12 36 17.78	7 43 56.4	155.72
19	10 59 4.33	4 58 5.6	163.08	19	12 38 22.02	7 59 30.7	155.22
20	11 1 9.95	4 41 47.1	163.26	20	12 40 26.34	8 15 2.1	154.71
21	11 3 15.43	4 25 27.5	163.43	21	12 42 30.74	8 30 30.4	154.19
22	11 5 20.78	4 9 6.9	163.58	22	12 44 35.22	8 45 55.5	153.65
23	11 7 26.00	N. 3 52 45.4	163.71	23	12 46 39.78	S. 9 1 17.4	153.10
THURSDAY 14.				SATURDAY 16.			
0	11 9 31.10	N. 3 36 23.1	163.83	0	12 48 44.44	S. 9 16 36.1	152.54
1	11 11 36.09	3 20 0.1	163.94	1	12 50 49.19	9 31 51.4	151.96
2	11 13 40.96	3 3 36.4	164.03	2	12 52 54.03	9 47 3.2	151.37
3	11 15 45.73	2 47 12.2	164.11	3	12 54 58.97	10 2 11.4	150.77
4	11 17 50.39	2 30 47.5	164.17	4	12 57 4.01	10 17 16.0	150.15
5	11 19 54.96	2 14 22.4	164.21	5	12 59 9.17	10 32 17.0	149.52
6	11 21 59.43	1 57 57.1	164.24	6	13 1 14.43	10 47 14.1	148.88
7	11 24 3.82	1 41 31.6	164.26	7	13 3 19.80	11 2 7.4	148.23
8	11 26 8.12	1 25 6.0	164.26	8	13 5 25.29	11 16 56.8	147.56
9	11 28 12.34	1 8 40.4	164.25	9	13 7 30.90	11 31 42.2	146.88
10	11 30 16.49	0 52 14.9	164.22	10	13 9 36.63	11 46 23.5	146.18
11	11 32 20.57	0 35 49.6	164.17	11	13 11 42.48	12 1 0.6	145.48
12	11 34 24.59	0 19 24.5	164.11	12	13 13 48.47	12 15 33.5	144.76
13	11 36 28.55	N. 0 2 59.8	164.04	13	13 15 54.58	12 30 2.1	144.03
14	11 38 32.45	S. 0 13 24.5	163.95	14	13 18 0.83	12 44 26.3	143.28
15	11 40 36.30	0 29 48.3	163.85	15	13 20 7.22	12 58 46.0	142.52
16	11 42 40.11	0 46 11.4	163.73	16	13 22 13.74	13 13 1.2	141.76
17	11 44 43.87	1 2 33.8	163.60	17	13 24 20.40	13 27 11.7	140.97
18	11 46 47.60	1 18 55.5	163.46	18	13 26 27.21	13 41 17.6	140.18
19	11 48 51.30	1 35 16.3	163.30	19	13 28 34.17	13 55 18.7	139.37
20	11 50 54.97	1 51 36.1	163.12	20	13 30 41.27	14 9 15.0	138.55
21	11 52 58.62	2 7 54.8	162.93	21	13 32 48.53	14 23 6.3	137.72
22	11 55 2.25	2 24 12.4	162.73	22	13 34 55.94	14 36 52.6	136.88
23	11 57 5.86	2 40 28.9	162.51	23	13 37 3.51	14 50 33.9	136.02
24	11 59 9.47	S. 2 56 44.0		24	13 39 11.23	S. 15 4 10.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 1 st m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 1 st m.
SUNDAY 17.				TUESDAY 19.			
0	13 39 11 ^h 23 ^m	S. 15 4 10 ^o 1 ⁿ	135 ^{''} 15	0	15 24 48 ^h 02 ^m	S. 23 54 45 ^o 5 ⁿ	81 ^{''} 04
1	13 41 19 12	15 17 41 1	134 ^{''} 27	1	15 27 4 24	24 2 51 8	79 ^{''} 70
2	13 43 27 16	15 31 6 7	133 ^{''} 38	2	15 29 20 61	24 10 50 0	78 ^{''} 35
3	13 45 35 38	15 44 27 0	132 ^{''} 48	3	15 31 37 12	24 18 40 2	77 ^{''} 00
4	13 47 43 75	15 57 42 0	131 ^{''} 56	4	15 33 53 77	24 26 22 2	75 ^{''} 64
5	13 49 52 30	16 10 51 4	130 ^{''} 64	5	15 36 10 57	24 33 56 1	74 ^{''} 27
6	13 52 1 02	16 23 55 2	129 ^{''} 70	6	15 38 27 49	24 41 21 7	72 ^{''} 90
7	13 54 9 90	16 36 53 4	128 ^{''} 75	7	15 40 44 55	24 48 39 1	71 ^{''} 52
8	13 56 18 96	16 49 46 0	127 ^{''} 79	8	15 43 1 74	24 55 48 3	70 ^{''} 14
9	13 58 28 20	17 2 32 7	126 ^{''} 81	9	15 45 19 05	25 2 49 2	68 ^{''} 75
10	14 0 37 60	17 15 13 6	125 ^{''} 83	10	15 47 36 48	25 9 41 7	67 ^{''} 35
11	14 2 47 19	17 27 48 6	124 ^{''} 84	11	15 49 54 03	25 16 25 8	65 ^{''} 95
12	14 4 56 95	17 40 17 7	123 ^{''} 83	12	15 52 11 69	25 23 1 6	64 ^{''} 55
13	14 7 6 89	17 52 40 7	122 ^{''} 81	13	15 54 29 47	25 29 28 9	63 ^{''} 14
14	14 9 17 01	18 4 57 6	121 ^{''} 78	14	15 56 47 35	25 35 47 8	61 ^{''} 73
15	14 11 27 31	18 17 8 3	120 ^{''} 74	15	15 59 5 34	25 41 58 2	60 ^{''} 31
16	14 13 37 79	18 29 12 8	119 ^{''} 69	16	16 1 23 42	25 48 0 1	58 ^{''} 89
17	14 15 48 45	18 41 11 0	118 ^{''} 63	17	16 3 41 60	25 53 53 5	57 ^{''} 46
18	14 17 59 29	18 53 2 9	117 ^{''} 56	18	16 5 59 87	25 59 38 3	56 ^{''} 04
19	14 20 10 32	19 4 48 3	116 ^{''} 48	19	16 8 18 23	26 5 14 5	54 ^{''} 60
20	14 22 21 52	19 16 27 2	115 ^{''} 39	20	16 10 36 67	26 10 42 2	53 ^{''} 17
21	14 24 32 92	19 27 59 5	114 ^{''} 28	21	16 12 55 18	26 16 1 2	51 ^{''} 73
22	14 26 44 49	19 39 25 2	113 ^{''} 17	22	16 15 13 77	26 21 11 6	50 ^{''} 28
23	14 28 56 25	S. 19 50 44 3	112 ^{''} 05	23	16 17 32 43	S. 26 26 13 3	48 ^{''} 84
MONDAY 18.				WEDNESDAY 20.			
0	14 31 8 19	S. 20 1 56 6	110 ^{''} 91	0	16 19 51 15	S. 26 31 6 4	47 ^{''} 39
1	14 33 20 32	20 13 2 1	109 ^{''} 77	1	16 22 9 93	26 35 50 8	45 ^{''} 94
2	14 35 32 63	20 24 0 7	108 ^{''} 61	2	16 24 28 77	26 40 26 5	44 ^{''} 49
3	14 37 45 12	20 34 52 4	107 ^{''} 45	3	16 26 47 66	26 44 53 4	43 ^{''} 03
4	14 39 57 79	20 45 37 2	106 ^{''} 28	4	16 29 6 59	26 49 11 6	41 ^{''} 58
5	14 42 10 65	20 56 14 9	105 ^{''} 10	5	16 31 25 56	26 53 21 1	40 ^{''} 12
6	14 44 23 69	21 6 45 5	103 ^{''} 91	6	16 33 44 57	26 57 21 9	38 ^{''} 66
7	14 46 36 91	21 17 9 0	102 ^{''} 71	7	16 36 3 61	27 1 13 9	37 ^{''} 20
8	14 48 50 31	21 27 25 3	101 ^{''} 50	8	16 38 22 68	27 4 57 1	35 ^{''} 73
9	14 51 3 88	21 37 34 3	100 ^{''} 28	9	16 40 41 77	27 8 31 5	34 ^{''} 27
10	14 53 17 64	21 47 36 0	99 ^{''} 06	10	16 43 0 87	27 11 57 2	32 ^{''} 81
11	14 55 31 57	21 57 30 4	97 ^{''} 82	11	16 45 19 99	27 15 14 0	31 ^{''} 34
12	14 57 45 67	22 7 17 4	96 ^{''} 58	12	16 47 39 11	27 18 22 1	29 ^{''} 88
13	14 59 59 95	22 16 56 9	95 ^{''} 33	13	16 49 58 23	27 21 21 4	28 ^{''} 41
14	15 2 14 41	22 26 28 9	94 ^{''} 07	14	16 52 17 35	27 24 11 9	26 ^{''} 94
15	15 4 29 03	22 35 53 4	92 ^{''} 80	15	16 54 36 46	27 26 53 6	25 ^{''} 48
16	15 6 43 82	22 45 10 2	91 ^{''} 53	16	16 56 55 55	27 29 26 5	24 ^{''} 01
17	15 8 58 78	22 54 19 4	90 ^{''} 24	17	16 59 14 63	27 31 50 6	22 ^{''} 53
18	15 11 13 91	23 3 20 9	88 ^{''} 95	18	17 1 33 68	27 34 5 9	21 ^{''} 08
19	15 13 29 20	23 12 14 6	87 ^{''} 65	19	17 3 52 69	27 36 12 4	19 ^{''} 62
20	15 15 44 65	23 21 0 6	86 ^{''} 34	20	17 6 11 68	27 38 10 2	18 ^{''} 16
21	15 18 0 26	23 29 38 7	85 ^{''} 03	21	17 8 30 62	27 39 59 2	16 ^{''} 70
22	15 20 16 02	23 38 8 9	83 ^{''} 71	22	17 10 49 52	27 41 39 4	15 ^{''} 24
23	15 22 31 94	23 46 31 2	82 ^{''} 38	23	17 13 8 36	27 43 10 9	13 ^{''} 78
24	15 24 48 02	S. 23 54 45 5		24	17 15 27 15	S. 27 44 33 6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 21.				SATURDAY 23.			
0	17 15 27.15	S. 27 44 33.6	12.32	0	19 3 50.96	S. 26 6 21.2	52.56
1	17 17 45.88	27 45 47.6	10.87	1	19 6 1.57	26 1 5.8	53.76
2	17 20 4.54	27 46 52.8	9.42	2	19 8 11.93	25 55 43.2	54.95
3	17 22 23.13	27 47 49.4	7.97	3	19 10 22.04	25 50 13.5	56.14
4	17 24 41.65	27 48 37.2	6.52	4	19 12 31.90	25 44 36.7	57.32
5	17 27 0.08	27 49 16.4	5.08	5	19 14 41.50	25 38 52.8	58.49
6	17 29 18.43	27 49 46.9	3.64	6	19 16 50.86	25 33 1.8	59.65
7	17 31 36.68	27 50 8.7	2.20	7	19 18 59.06	25 27 3.9	60.81
8	17 33 54.84	27 50 22.0	0.76	8	19 21 8.80	25 20 59.0	61.95
9	17 36 12.90	27 50 26.6	0.66	9	19 23 17.39	25 14 47.3	63.09
10	17 38 30.85	27 50 22.6	2.09	10	19 25 25.71	25 8 28.7	64.23
11	17 40 48.69	27 50 10.0	3.51	11	19 27 33.78	25 2 3.3	65.35
12	17 43 6.41	27 49 48.9	4.93	12	19 29 41.59	24 55 31.1	66.47
13	17 45 24.01	27 49 19.3	6.35	13	19 31 49.14	24 48 52.2	67.58
14	17 47 41.48	27 48 41.1	7.76	14	19 33 56.43	24 42 6.7	68.68
15	17 49 58.82	27 47 54.5	9.17	15	19 36 3.46	24 35 14.6	69.77
16	17 52 16.03	27 46 59.4	10.58	16	19 38 10.22	24 28 16.0	70.86
17	17 54 33.10	27 45 55.9	11.98	17	19 40 16.73	24 21 10.8	71.94
18	17 56 50.02	27 44 44.0	13.38	18	19 42 22.97	24 13 59.2	73.00
19	17 59 6.79	27 43 23.7	14.77	19	19 44 28.95	24 6 41.1	74.07
20	18 1 23.41	27 41 55.1	16.15	20	19 46 34.66	23 59 16.7	75.12
21	18 3 39.87	27 40 18.2	17.54	21	19 48 40.11	23 51 45.9	76.17
22	18 5 56.17	27 38 32.9	18.91	22	19 50 45.30	23 44 8.9	77.20
23	18 8 12.30	S. 27 36 39.4	20.28	23	19 52 50.23	S. 23 36 25.6	78.23
FRIDAY 22.				SUNDAY 24.			
0	18 10 28.26	S. 27 34 37.7	21.65	0	19 54 54.89	S. 23 28 36.2	79.25
1	18 12 44.05	27 32 27.8	23.01	1	19 56 59.29	23 20 40.6	80.27
2	18 14 59.66	27 30 9.7	24.37	2	19 59 3.43	23 12 39.0	81.27
3	18 17 15.09	27 27 43.4	25.72	3	20 1 7.31	23 4 31.3	82.27
4	18 19 30.33	27 25 9.1	27.06	4	20 3 10.92	22 56 17.7	83.26
5	18 21 45.38	27 22 26.7	28.40	5	20 5 14.28	22 47 58.1	84.24
6	18 24 0.24	27 19 36.3	29.73	6	20 7 17.38	22 39 32.6	85.22
7	18 26 14.90	27 16 37.9	31.05	7	20 9 20.22	22 31 1.3	86.18
8	18 28 29.36	27 13 31.6	32.37	8	20 11 22.80	22 22 24.1	87.14
9	18 30 43.62	27 10 17.3	33.68	9	20 13 25.13	22 13 41.2	88.09
10	18 32 57.67	27 6 55.2	34.99	10	20 15 27.21	22 4 52.6	89.04
11	18 35 11.51	27 3 25.3	36.29	11	20 17 29.03	21 55 58.4	89.97
12	18 37 25.13	26 59 47.5	37.58	12	20 19 30.60	21 46 58.5	90.90
13	18 39 38.54	26 56 2.0	38.87	13	20 21 31.92	21 37 53.1	91.82
14	18 41 51.73	26 52 8.8	40.14	14	20 23 32.99	21 28 42.1	92.73
15	18 44 4.70	26 48 7.9	41.42	15	20 25 33.81	21 19 25.7	93.64
16	18 46 17.44	26 43 59.3	42.68	16	20 27 34.39	21 10 3.8	94.53
17	18 48 29.95	26 39 43.2	43.94	17	20 29 34.72	21 0 36.6	95.42
18	18 50 42.23	26 35 19.5	45.19	18	20 31 34.81	20 51 4.0	96.30
19	18 52 54.28	26 30 48.3	46.44	19	20 33 34.66	20 41 26.2	97.18
20	18 55 6.10	26 26 9.7	47.68	20	20 35 34.27	20 31 43.1	98.04
21	18 57 17.67	26 21 23.6	48.91	21	20 37 33.63	20 21 54.8	98.90
22	18 59 29.01	26 16 30.1	50.13	22	20 39 32.77	20 12 1.4	99.75
23	19 1 40.11	26 11 29.3	51.35	23	20 41 31.67	20 2 2.8	100.60
24	19 3 50.96	S. 26 6 21.2		24	20 43 30.33	S. 19 51 59.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 25.				WEDNESDAY 27.			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	20 43 30.33	S. 19 51 59.2	101.43	0	22 14 46.93	S. 10 24 20.8	133.01
1	20 45 28.77	19 41 50.6	102.26	1	22 16 37.78	10 11 2.7	133.49
2	20 47 26.98	19 31 37.0	103.08	2	22 18 28.55	9 57 41.7	133.97
3	20 49 24.97	19 21 18.5	103.89	3	22 20 19.26	9 44 17.9	134.44
4	20 51 22.73	19 10 55.1	104.70	4	22 22 9.90	9 30 51.2	134.91
5	20 53 20.27	19 0 26.9	105.50	5	22 24 0.48	9 17 21.7	135.37
6	20 55 17.60	18 49 53.9	106.29	6	22 25 51.01	9 3 49.4	135.82
7	20 57 14.70	18 39 16.2	107.07	7	22 27 41.49	8 50 14.5	136.26
8	20 59 11.60	18 28 33.7	107.84	8	22 29 31.92	8 36 36.9	136.70
9	21 1 8.29	18 17 46.6	108.61	9	22 31 22.30	8 22 56.7	137.13
10	21 3 4.77	18 6 54.9	109.37	10	22 33 12.65	8 9 13.9	137.55
11	21 5 1.03	17 55 58.7	110.13	11	22 35 2.97	7 55 28.5	137.97
12	21 6 57.10	17 44 57.9	110.87	12	22 36 53.25	7 41 40.7	138.38
13	21 8 52.97	17 33 52.7	111.61	13	22 38 43.51	7 27 50.4	138.78
14	21 10 48.64	17 22 43.0	112.34	14	22 40 33.74	7 13 57.7	139.17
15	21 12 44.12	17 11 28.9	113.06	15	22 42 23.95	7 0 2.6	139.56
16	21 14 39.41	17 0 10.5	113.78	16	22 44 14.15	6 46 5.2	139.94
17	21 16 34.51	16 48 47.8	114.49	17	22 46 4.35	6 32 5.6	140.31
18	21 18 29.42	16 37 20.8	115.19	18	22 47 54.53	6 18 3.7	140.67
19	21 20 24.15	16 25 49.6	115.89	19	22 49 44.72	6 3 59.6	141.03
20	21 22 18.70	16 14 14.2	116.58	20	22 51 34.91	5 49 53.4	141.38
21	21 24 13.08	16 2 34.7	117.26	21	22 53 25.11	5 35 45.1	141.72
22	21 26 7.28	15 50 51.1	117.93	22	22 55 15.32	5 21 34.8	142.05
23	21 28 1.31	S. 15 39 3.5	118.60	23	22 57 5.54	S. 5 7 22.4	142.38
TUESDAY 26.				THURSDAY 28.			
0	21 29 55.17	S. 15 27 11.9	119.26	0	22 58 55.79	S. 4 53 8.1	142.70
1	21 31 48.87	15 15 16.3	119.91	1	23 0 46.07	4 38 51.9	143.01
2	21 33 42.42	15 3 16.8	120.56	2	23 2 36.37	4 24 33.8	143.31
3	21 35 35.80	14 51 13.4	121.20	3	23 4 26.71	4 10 14.0	143.60
4	21 37 29.03	14 39 6.2	121.83	4	23 6 17.09	3 55 52.3	143.89
5	21 39 22.11	14 26 55.2	122.46	5	23 8 7.52	3 41 28.9	144.17
6	21 41 15.05	14 14 40.4	123.07	6	23 9 57.99	3 27 3.8	144.44
7	21 43 7.84	14 2 21.9	123.69	7	23 11 48.51	3 12 37.2	144.71
8	21 45 0.49	13 49 59.8	124.29	8	23 13 39.09	2 58 8.9	144.96
9	21 46 53.01	13 37 34.0	124.89	9	23 15 29.74	2 43 39.1	145.21
10	21 48 45.39	13 25 4.7	125.48	10	23 17 20.44	2 29 7.8	145.45
11	21 50 37.65	13 12 31.8	126.06	11	23 19 11.22	2 14 35.0	145.68
12	21 52 29.78	12 59 55.4	126.64	12	23 21 2.07	2 0 0.9	145.91
13	21 54 21.79	12 47 15.5	127.21	13	23 22 53.00	1 45 25.4	146.12
14	21 56 13.68	12 34 32.3	127.77	14	23 24 44.02	1 30 48.6	146.33
15	21 58 5.45	12 21 45.6	128.33	15	23 26 35.13	1 16 10.6	146.53
16	21 59 57.12	12 8 55.6	128.87	16	23 28 26.33	1 1 31.4	146.72
17	22 1 48.68	11 56 2.3	129.42	17	23 30 17.63	0 46 51.1	146.90
18	22 3 40.14	11 43 5.8	129.95	18	23 32 9.03	0 32 9.7	147.07
19	22 5 31.49	11 30 6.1	130.48	19	23 34 0.54	0 17 27.2	147.23
20	22 7 22.75	11 17 3.2	131.00	20	23 35 52.17	S. 0 2 43.8	147.39
21	22 9 13.92	11 3 57.2	131.51	21	23 37 43.91	N. 0 12 0.6	147.53
22	22 11 5.01	10 50 48.1	132.02	22	23 39 35.77	0 26 45.8	147.67
23	22 12 56.01	10 37 36.0	132.52	23	23 41 27.76	0 41 31.8	147.79
24	22 14 46.93	S. 10 24 20.8		24	23 43 19.88	N. 0 56 18.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 29.				SATURDAY 30.			
0	^h 23 ^m 43 ^s 19.88	N. 0 56 18.6	147.91	0	^h 0 29 2.65	N. 6 52 16.3	147.71
1	23 45 12.14	1 11 6.1	148.02	1	0 30 59.61	7 7 2.6	147.56
2	23 47 4.54	1 25 54.2	148.11	2	0 32 56.83	7 21 48.0	147.40
3	23 48 57.08	1 40 42.9	148.20	3	0 34 54.31	7 36 32.4	147.23
4	23 50 49.78	1 55 32.2	148.28	4	0 36 52.05	7 51 15.8	147.05
5	23 52 42.63	2 10 21.9	148.35	5	0 38 50.07	8 5 58.1	146.86
6	23 54 35.64	2 25 12.0	148.41	6	0 40 48.36	8 20 39.3	146.65
7	23 56 28.82	2 40 2.5	148.46	7	0 42 46.93	8 35 19.3	146.43
8	23 58 22.16	2 54 53.3	148.50	8	0 44 45.78	8 49 57.9	146.20
9	0 0 15.68	3 9 44.4	148.53	9	0 46 44.93	9 4 35.1	145.95
10	0 2 9.38	3 24 35.6	148.55	10	0 48 44.37	9 19 10.8	145.69
11	0 4 3.26	3 39 26.9	148.56	11	0 50 44.11	9 33 45.0	145.42
12	0 5 57.33	3 54 18.3	148.56	12	0 52 44.16	9 48 17.5	145.13
13	0 7 51.60	4 9 9.7	148.55	13	0 54 44.51	10 2 48.3	144.83
14	0 9 46.06	4 24 1.0	148.53	14	0 56 45.18	10 17 17.3	144.52
15	0 11 40.72	4 38 52.2	148.49	15	0 58 46.16	10 31 44.5	144.19
16	0 13 35.59	4 53 43.2	148.45	16	1 0 47.46	10 46 9.7	143.85
17	0 15 30.68	5 8 33.9	148.40	17	1 2 49.09	11 0 32.8	143.50
18	0 17 25.98	5 23 24.3	148.33	18	1 4 51.05	11 14 53.9	143.13
19	0 19 21.51	5 38 14.4	148.26	19	1 6 53.35	11 29 12.7	142.75
20	0 21 17.27	5 53 4.0	148.17	20	1 8 55.99	11 43 29.2	142.35
21	0 23 13.25	6 7 53.0	148.07	21	1 10 58.97	11 57 43.3	141.94
22	0 25 9.48	6 22 41.4	147.96	22	1 13 2.29	12 11 55.0	141.52
23	0 27 5.94	6 37 29.2	147.84	23	1 15 5.97	12 26 4.2	141.08
24	0 29 2.65	N. 6 52 16.3		24	1 17 10.01	N. 12 40 10.7	

PHASES OF THE MOON.

	d	h	m
● New Moon - - - - -	2	22	17.5
) First Quarter - - - - -	9	23	20.7
○ Full Moon - - - - -	16	21	5.9
(Last Quarter - - - - -	24	16	45.2

	d	h
(Perigee - - - - -	11	10
(Apogee - - - - -	24	8

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
5	SUN W.	26 0 23	2852	27 33 43	2841	29 7 18	2829	30 41 9	2818
	Jupiter E.	36 20 30	2586	34 41 10	2583	33 1 58	2580	31 22 36	2579
	Pollux E.	70 8 6	2492	68 26 41	2484	66 45 6	2477	65 3 21	2470
	Saturn E.	84 36 17	2483	82 54 40	2475	81 12 51	2467	79 30 52	2460
	Regulus E.	107 1 25	2483	105 19 48	2475	103 37 59	2467	101 55 59	2460
6	SUN W.	38 33 44	2770	40 8 51	2762	41 44 9	2754	43 19 37	2746
	Pollux E.	56 32 9	2437	54 49 27	2432	53 6 38	2426	51 23 40	2421
	Saturn E.	70 58 24	2426	69 15 26	2419	67 32 19	2414	65 49 4	2408
	Regulus E.	93 23 29	2425	91 40 30	2419	89 57 23	2412	88 14 6	2406
7	SUN W.	51 19 21	2713	52 55 44	2707	54 32 15	2701	56 8 53	2695
	Mars W.	21 3 44	2710	22 40 10	2692	24 17 1	2676	25 54 13	2661
	Pollux E.	42 47 6	2398	41 3 28	2394	39 19 45	2391	37 35 57	2388
	Saturn E.	57 10 44	2380	55 26 41	2375	53 42 31	2371	51 58 15	2366
	Regulus E.	79 35 38	2379	77 51 33	2374	76 7 21	2369	74 23 2	2364
8	SUN W.	64 13 53	2670	65 51 13	2666	67 28 39	2661	69 6 11	2657
	Mars W.	34 4 22	2611	35 43 2	2603	37 21 53	2596	39 0 53	2590
	Aldebaran W.	17 38 20	2326	19 3 46	2307	20 32 12	2290	22 3 2	2276
	Pollux E.	28 56 9	2381	27 12 7	2382	25 28 7	2384	23 44 9	2388
	Saturn E.	43 15 14	2345	41 30 20	2341	39 45 21	2337	38 0 16	2334
	Regulus E.	65 39 46	2342	63 54 48	2339	62 9 45	2335	60 24 36	2331
9	SUN W.	77 15 10	2638	78 53 13	2635	80 31 20	2632	82 9 32	2629
	Mars W.	47 17 58	2563	48 57 44	2558	50 37 37	2553	52 17 36	2550
	Aldebaran W.	30 0 52	2609	31 39 35	2578	33 19 0	2551	34 59 2	2528
	Jupiter W.	19 21 47	2515	21 2 39	2490	22 44 7	2470	24 26 2	2454
	Saturn E.	29 13 42	2319	27 28 10	2317	25 42 35	2314	23 56 56	2313
	Regulus E.	51 37 33	2314	49 51 54	2311	48 6 11	2308	46 20 23	2305
	Spica E.	105 39 34	2317	103 54 0	2313	102 8 20	2311	100 22 37	2308
10	SUN W.	90 21 28	2615	92 0 2	2613	93 38 39	2612	95 17 18	2610
	Mars W.	60 38 46	2533	62 19 14	2530	63 59 45	2527	65 40 21	2525
	Aldebaran W.	43 26 7	2447	45 8 35	2435	46 51 19	2425	48 34 18	2417
	Jupiter W.	33 0 25	2401	34 43 59	2394	36 27 42	2389	38 11 33	2383
	Regulus E.	37 30 26	2293	35 44 17	2291	33 58 4	2289	32 11 48	2287
	Spica E.	91 33 0	2296	89 46 54	2293	88 0 45	2291	86 14 33	2289
11	SUN W.	103 31 10	2603	105 10 1	2602	106 48 54	2601	108 27 47	2601
	Mars W.	74 4 3	2515	75 44 55	2514	77 25 48	2513	79 6 43	2512
	Aldebaran W.	57 12 1	2383	58 56 1	2378	60 40 7	2373	62 24 20	2370
	Jupiter W.	46 52 30	2364	48 36 57	2361	50 21 28	2359	52 6 1	2357
	Pollux W.	14 3 41	2412	15 46 58	2385	17 30 54	2366	19 15 18	2351
	Spica E.	77 22 57	2283	75 36 32	2282	73 50 6	2281	72 3 38	2281
12	SUN W.	116 42 17	2602	118 21 9	2603	120 0 0	2604	121 38 49	2607
	Mars W.	87 31 32	2511	89 12 30	2511	90 53 28	2512	92 34 24	2512
	Aldebaran W.	71 6 31	2358	72 51 6	2357	74 35 42	2356	76 20 20	2356
	Jupiter W.	60 49 24	2352	62 34 7	2351	64 18 52	2352	66 3 36	2353
	Pollux W.	28 1 22	2313	29 47 2	2310	31 32 47	2307	33 18 36	2306
	Spica E.	63 11 12	2280	61 24 44	2281	59 38 16	2282	57 51 50	2283
	Antares E.	109 3 19	2276	107 16 45	2277	105 30 12	2278	103 43 40	2279

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
5	SUN W.	32 15 14	2807	33 49 33	2798	35 24 4	2788	36 58 48	2779
	Jupiter E.	29 43 12	2580	28 3 49	2581	26 24 28	2584	24 45 11	2590
	Pollux E.	63 21 25	2463	61 39 20	2456	59 57 5	2450	58 14 41	2444
	Saturn E.	77 48 42	2453	76 6 22	2446	74 23 53	2438	72 41 13	2432
	Regulus E.	100 13 49	2453	98 31 29	2446	96 48 59	2438	95 6 19	2431
6	SUN W.	44 55 16	2739	46 31 4	2732	48 7 1	2725	49 43 7	2719
	Pollux E.	49 40 35	2415	47 57 22	2411	46 14 3	2406	44 30 37	2403
	Saturn E.	64 5 40	2402	62 22 8	2396	60 38 27	2391	58 54 39	2386
	Regulus E.	86 30 40	2401	84 47 7	2395	83 3 25	2389	81 19 35	2384
7	SUN W.	57 45 39	2689	59 22 33	2685	60 59 33	2680	62 36 40	2675
	Mars W.	27 31 45	2649	29 9 33	2638	30 47 36	2628	32 25 53	2619
	Pollux E.	35 52 5	2386	34 8 10	2383	32 24 11	2382	30 40 10	2382
	Saturn E.	50 13 51	2362	48 29 21	2357	46 44 45	2353	45 0 3	2348
	Regulus E.	72 38 35	2360	70 54 2	2355	69 9 23	2351	67 24 37	2347
8	SUN W.	70 43 48	2653	72 21 31	2649	73 59 19	2646	75 37 12	2642
	Mars W.	40 40 2	2583	42 19 20	2578	43 58 45	2572	45 38 18	2567
	Aldebaran W.	23 35 51	2801	25 10 18	2740	26 46 5	2689	28 23 0	2646
	Pollux E.	22 0 17	2394	20 16 34	2403	18 33 3	2415	16 49 49	2433
	Saturn E.	36 15 7	2331	34 29 52	2328	32 44 33	2325	30 59 10	2322
	Regulus E.	58 39 21	2328	56 54 2	2324	55 8 37	2320	53 23 7	2317
9	SUN W.	83 47 48	2626	85 26 7	2623	87 4 31	2621	88 42 58	2618
	Mars W.	53 57 40	2546	55 37 49	2543	57 18 3	2539	58 58 23	2536
	Aldebaran W.	36 39 36	2507	38 20 39	2489	40 2 7	2474	41 43 57	2460
	Jupiter W.	26 8 21	2440	27 50 59	2428	29 33 54	2418	31 17 3	2409
	Saturn E.	22 11 15	2310	20 25 30	2309	18 39 44	2309	16 53 57	2308
	Regulus E.	44 34 31	2302	42 48 35	2300	41 2 36	2298	39 16 33	2295
	Spica E.	98 36 49	2305	96 50 57	2303	95 5 2	2300	93 19 3	2298
10	SUN W.	96 56 0	2607	98 34 45	2606	100 13 31	2604	101 52 20	2604
	Mars W.	67 21 0	2523	69 1 41	2520	70 42 26	2519	72 23 13	2517
	Aldebaran W.	50 17 29	2408	52 0 52	2401	53 44 26	2394	55 28 10	2389
	Jupiter W.	39 55 32	2378	41 39 38	2374	43 23 51	2371	45 8 8	2367
	Regulus E.	30 25 30	2285	28 39 9	2284	26 52 46	2283	25 6 21	2281
	Spica E.	84 28 18	2288	82 42 1	2287	80 55 42	2285	79 9 20	2284
11	SUN W.	110 6 41	2601	111 45 35	2600	113 24 30	2601	115 3 24	2601
	Mars W.	80 47 40	2512	82 28 37	2511	84 9 35	2510	85 50 34	2511
	Aldebaran W.	64 8 38	2366	65 53 1	2364	67 37 28	2362	69 21 58	2360
	Jupiter W.	53 50 38	2355	55 35 17	2354	57 19 58	2353	59 4 40	2352
	Pollux W.	21 0 4	2339	22 45 7	2330	24 30 23	2323	26 15 49	2318
	Spica E.	70 17 10	2280	68 30 41	2279	66 44 11	2280	64 57 42	2279
12	SUN W.	123 17 35	2608	124 56 20	2610	126 35 1	2613	128 13 38	2616
	Mars W.	94 15 20	2514	95 56 13	2515	97 37 5	2517	99 17 54	2520
	Aldebaran W.	78 4 58	2357	79 49 35	2357	81 34 12	2357	83 18 48	2359
	Jupiter W.	67 48 19	2353	69 33 2	2354	71 17 43	2355	73 2 22	2357
	Pollux W.	35 4 27	2305	36 50 19	2304	38 36 13	2304	40 22 7	2304
	Spica E.	56 5 25	2284	54 19 2	2285	52 32 41	2287	50 46 23	2289
	Antares E.	101 57 10	2280	100 10 41	2281	98 24 14	2283	96 37 49	2285

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
13	Mars W.	100 58 39	2522	102 39 22	2525	104 20 1	2528	106 0 36	2531
	Aldebaran W.	85 3 22	2361	86 47 53	2363	88 32 21	2365	90 16 46	2368
	Jupiter W.	74 46 58	2359	76 31 32	2361	78 16 3	2363	80 0 31	2366
	Pollux W.	42 8 0	2305	43 53 52	2306	45 39 42	2308	47 25 30	2310
	Saturn W.	27 28 54	2294	29 15 2	2296	31 1 7	2298	32 47 9	2301
	Spica E.	49 0 8	2292	47 13 57	2294	45 27 49	2298	43 41 46	2301
14	Antares E.	94 51 27	2287	93 5 8	2289	91 18 53	2292	89 32 42	2295
	Aldebaran W.	98 57 33	2390	100 41 22	2395	102 25 4	2401	104 8 37	2408
	Jupiter W.	88 41 36	2385	90 25 32	2390	92 9 21	2396	93 53 2	2401
	Pollux W.	56 13 32	2326	57 58 54	2330	59 44 9	2335	61 29 18	2340
	Saturn W.	41 36 7	2320	43 21 38	2325	45 7 1	2329	46 52 18	2335
	Regulus W.	19 13 27	2315	20 59 5	2319	22 44 36	2324	24 30 0	2330
15	Spica E.	34 52 55	2323	33 7 29	2328	31 22 11	2335	29 37 2	2341
	Antares E.	80 42 59	2314	78 57 20	2318	77 11 47	2324	75 26 22	2329
	Jupiter W.	102 29 21	2434	104 12 8	2441	105 54 44	2449	107 37 9	2457
	Pollux W.	70 13 3	2370	71 57 21	2377	73 41 29	2384	75 25 26	2392
	Saturn W.	55 36 35	2366	57 20 59	2374	59 5 11	2381	60 49 14	2389
	Regulus W.	33 14 56	2360	34 59 28	2368	36 43 49	2375	38 27 59	2383
16	Antares E.	66 41 23	2360	64 56 51	2368	63 12 30	2375	61 28 19	2383
	α Aquilæ E.	116 19 49	2355	114 54 45	2327	113 29 20	2322	112 3 37	2309
	Pollux W.	84 2 18	2435	85 45 3	2445	87 27 33	2455	89 9 50	2465
	Saturn W.	69 26 25	2433	71 9 13	2443	72 51 47	2453	74 34 7	2463
	Regulus W.	47 5 53	2427	48 48 50	2436	50 31 33	2446	52 14 2	2457
	Antares E.	52 50 25	2426	51 7 28	2436	49 24 45	2447	47 42 17	2456
17	α Aquilæ E.	104 52 2	2376	103 25 24	2374	101 58 44	2375	100 32 5	2378
	Pollux W.	97 37 32	2520	99 18 17	2531	100 58 47	2543	102 39 0	2556
	Saturn W.	83 2 4	2518	84 42 52	2529	86 23 25	2542	88 3 40	2553
	Regulus W.	60 42 44	2511	62 23 42	2522	64 4 24	2535	65 44 49	2546
	Antares E.	39 13 35	2511	37 32 37	2523	35 51 56	2535	34 11 31	2547
	α Aquilæ E.	93 20 1	2309	91 54 2	2319	90 28 15	2320	89 2 41	2322
18	Saturn W.	96 20 44	2616	97 59 17	2629	99 37 32	2643	101 15 29	2655
	Regulus W.	74 2 42	2609	75 41 25	2621	77 19 51	2635	78 57 58	2648
	Spica W.	20 5 56	2631	21 44 9	2641	23 22 8	2652	24 59 53	2663
	α Aquilæ E.	81 59 2	2323	80 35 17	2343	79 11 55	2364	77 48 57	2386
	Fomalhaut E.	106 44 36	2947	105 13 17	2955	103 42 7	2964	102 11 9	2972
	Saturn W.	109 20 49	2722	110 57 0	2735	112 32 53	2749	114 8 28	2762
19	Regulus W.	87 4 12	2714	88 40 34	2727	90 16 38	2740	91 52 25	2753
	Spica W.	33 4 44	2723	34 40 53	2735	36 16 46	2747	37 52 23	2760
	α Aquilæ E.	71 0 49	2515	69 40 41	2545	68 21 6	2577	67 2 6	2610
	Fomalhaut E.	94 39 20	3027	93 9 41	3039	91 40 16	3052	90 11 7	3065
	Venus E.	113 27 25	3129	111 59 51	3144	110 32 35	3158	109 5 36	3173
	Regulus W.	99 47 2	2818	101 21 7	2830	102 54 56	2842	104 28 29	2854
20	Spica W.	45 46 18	2823	47 20 16	2835	48 53 59	2847	50 27 26	2859
	α Aquilæ E.	60 36 37	3802	59 21 37	3848	58 7 24	3895	56 53 59	3945
	Fomalhaut E.	82 49 31	3155	81 22 4	3150	79 54 55	3167	78 28 6	3182
	Venus E.	101 55 0	3245	100 29 44	3258	99 4 44	3271	97 39 59	3286
	α Pegasi E.	104 42 51	3030	103 13 16	3040	101 43 53	3050	100 14 42	3060

MEAN TIME.

LUNAR DISTANCES.

Day of the Month	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
13	Mars W.	107 41 6	2534	109 21 32	2539	111 1 51	2543	112 42 5	2548
	Aldebaran W.	92 1 6	2371	93 45 22	2375	95 29 32	2380	97 13 36	2385
	Jupiter W.	81 44 54	2369	83 29 13	2373	85 13 26	2377	86 57 34	2381
	Pollux W.	49 11 15	2313	50 56 56	2316	52 42 33	2319	54 28 5	2322
	Saturn W.	34 33 7	2304	36 19 0	2308	38 4 48	2311	39 50 31	2316
	Spica E.	41 55 48	2304	40 9 55	2309	38 24 9	2313	36 38 28	2318
14	Antares E.	87 46 35	2298	86 0 32	2302	84 14 35	2306	82 28 44	2310
	Aldebaran W.	105 52 1	2415	107 35 15	2422	109 18 18	2430	111 1 10	2438
	Jupiter W.	95 36 35	2406	97 20 1	2413	99 3 17	2420	100 46 24	2427
	Pollux W.	63 14 19	2345	64 59 13	2351	66 43 58	2357	68 28 35	2363
	Saturn W.	48 37 27	2341	50 22 27	2346	52 7 19	2353	53 52 2	2359
	Regulus W.	26 15 16	2335	28 0 25	2341	29 45 24	2347	31 30 15	2354
15	Spica E.	27 52 3	2338	26 7 14	2356	24 22 36	2365	22 38 11	2374
	Antares E.	73 41 5	2335	71 55 56	2341	70 10 56	2347	68 26 5	2353
	Jupiter W.	109 19 22	2466	111 1 23	2475	112 43 11	2484	114 24 46	2494
	Pollux W.	77 9 12	2400	78 52 47	2408	80 36 10	2417	82 19 20	2426
	Saturn W.	62 33 4	2397	64 16 43	2405	66 0 10	2414	67 43 24	2424
	Regulus W.	40 11 58	2391	41 55 46	2400	43 39 21	2408	45 22 44	2418
16	Antares E.	59 44 20	2391	58 0 33	2400	56 16 58	2408	54 33 35	2417
	α Aquilæ E.	110 37 39	3198	109 11 27	3190	107 45 6	3183	106 18 37	3178
	Pollux W.	90 51 53	2476	92 33 40	2486	94 15 13	2497	95 56 30	2508
	Saturn W.	76 16 13	2473	77 58 4	2484	79 39 39	2495	81 21 0	2507
	Regulus W.	53 56 16	2467	55 38 16	2477	57 20 1	2489	59 1 30	2500
	Antares E.	46 0 2	2467	44 18 2	2478	42 36 18	2489	40 54 49	2500
17	α Aquilæ E.	99 5 29	3181	97 38 57	3185	96 12 30	3192	94 46 11	3199
	Pollux W.	104 18 56	2568	105 58 35	2581	107 37 56	2593	109 17 1	2606
	Saturn W.	89 43 39	2566	91 23 21	2578	93 2 46	2591	94 41 54	2604
	Regulus W.	67 24 58	2558	69 4 50	2571	70 44 25	2584	72 23 42	2596
	Antares E.	32 31 23	2559	30 51 31	2572	29 11 57	2584	27 32 40	2596
	α Aquilæ E.	87 37 22	3256	86 12 19	3271	84 47 34	3288	83 23 8	3305
18	Saturn W.	102 53 9	2669	104 30 31	2683	106 7 34	2695	107 44 21	2709
	Regulus W.	80 35 48	2661	82 13 21	2674	83 50 36	2687	85 27 33	2701
	Spica W.	26 37 22	2674	28 14 37	2686	29 51 35	2698	31 28 18	2710
	α Aquilæ E.	76 26 24	3409	75 4 17	3433	73 42 38	3459	72 21 28	3487
	Fomalhaut E.	100 40 21	2982	99 9 46	2993	97 39 24	3003	96 9 15	3014
	Saturn W.	115 43 46	2775	117 18 47	2789	118 53 30	2801	120 27 57	2814
19	Regulus W.	93 27 54	2766	95 3 6	2779	96 38 2	2792	98 12 40	2805
	Spica W.	39 27 43	2773	41 2 46	2785	42 37 33	2798	44 12 3	2810
	α Aquilæ E.	65 43 42	3644	64 25 55	3681	63 8 48	3719	61 52 21	3760
	Fomalhaut E.	88 42 14	3078	87 13 37	3092	85 45 17	3106	84 17 15	3121
	Venus E.	107 38 55	3188	106 12 31	3202	104 46 24	3216	103 20 34	3230
	Regulus W.	106 1 47	2866	107 34 49	2878	109 7 36	2889	110 40 9	2901
20	Spica W.	52 0 37	2870	53 33 34	2882	55 6 16	2894	56 38 43	2905
	α Aquilæ E.	55 41 25	3999	54 29 44	4056	53 19 0	4116	52 9 14	4180
	Fomalhaut E.	77 1 35	3198	75 35 23	3214	74 9 31	3231	72 43 58	3248
	Venus E.	96 15 31	3299	94 51 18	3312	93 27 21	3325	92 3 38	3338
	α Pegasi E.	98 45 43	3070	97 16 56	3081	95 48 23	3091	94 20 2	3101

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
21	Spica W.	58 10 56	2915	59 42 56	2926	61 14 42	2936	62 46 15	2946
	Fomalhaut E.	71 18 46	3265	69 53 54	3283	68 29 23	3301	67 5 13	3320
	Venus E.	90 40 10	3350	89 16 56	3362	87 53 56	3373	86 31 9	3385
	α Pegasi E.	92 51 53	3111	91 23 57	3122	89 56 14	3132	88 28 43	3143
	SUN E.	130 32 58	3294	129 8 39	3305	127 44 33	3315	126 20 39	3325
22	Spica W.	70 20 58	2991	71 51 22	2999	73 21 36	3007	74 51 40	3014
	Antares W.	24 27 11	2989	25 57 38	2997	27 27 55	3005	28 58 2	3012
	Fomalhaut E.	60 9 56	3420	58 48 2	3443	57 26 34	3465	56 5 31	3489
	Venus E.	79 40 23	3437	78 18 48	3446	76 57 24	3454	75 36 9	3463
	α Pegasi E.	81 14 16	3193	79 47 58	3204	78 21 53	3214	76 56 0	3223
	SUN E.	119 24 0	3372	118 1 12	3380	116 38 33	3389	115 16 4	3396
23	Spica W.	82 19 56	3044	83 49 14	3049	85 18 26	3053	86 47 33	3057
	Antares W.	36 26 34	3041	37 55 56	3047	39 25 11	3051	40 54 21	3054
	Fomalhaut E.	49 27 21	3628	48 9 17	3661	46 51 48	3696	45 34 57	3733
	Venus E.	68 52 8	3499	67 31 42	3505	66 11 23	3509	64 51 9	3514
	α Pegasi E.	69 49 24	3271	68 24 39	3281	67 0 5	3290	65 35 42	3300
	SUN E.	108 25 36	3428	107 3 51	3432	105 42 11	3437	104 20 36	3442
24	Spica W.	94 12 9	3069	95 40 56	3070	97 9 42	3070	98 38 28	3071
	Antares W.	48 19 14	3066	49 48 5	3068	51 16 54	3068	52 45 43	3068
	Fomalhaut E.	39 21 37	3975	38 9 33	4039	36 58 32	4109	35 48 39	4187
	Venus E.	58 11 9	3531	56 51 19	3533	55 31 31	3534	54 11 44	3535
	α Pegasi E.	58 36 33	3349	57 13 18	3359	55 50 15	3371	54 27 25	3382
	SUN E.	97 33 41	3454	96 12 25	3455	94 51 11	3455	93 29 57	3455
25	Spica W.	106 2 27	3063	107 31 22	3060	109 0 20	3057	110 29 22	3054
	Antares W.	60 10 1	3061	61 38 59	3058	63 8 0	3054	64 37 6	3050
	Venus E.	47 32 52	3532	46 13 3	3529	44 53 11	3527	43 33 17	3524
	α Pegasi E.	47 36 42	3450	46 15 22	3467	44 54 21	3485	43 33 40	3506
	SUN E.	86 43 35	3448	85 22 13	3445	84 0 47	3441	82 39 17	3437
26	Antares W.	72 3 59	3024	73 33 42	3017	75 3 33	3010	76 33 34	3003
	Venus E.	36 52 50	3504	35 32 30	3500	34 12 6	3495	32 51 36	3489
	α Pegasi E.	36 56 48	3649	35 39 7	3690	34 22 9	3736	33 6 0	3790
	SUN E.	75 50 25	3409	74 28 19	3402	73 6 5	3394	71 43 42	3387
27	Antares W.	84 6 6	2958	85 37 11	2949	87 8 28	2939	88 39 58	2928
	α Aquilæ W.	42 1 30	4940	42 59 13	4816	43 58 36	4702	44 59 34	4598
	Venus E.	26 7 42	3466	24 46 40	3463	23 25 34	3461	22 4 26	3459
	SUN E.	64 49 24	3341	63 26 0	3331	62 2 24	3319	60 38 35	3309
28	Antares W.	96 20 59	2870	97 53 57	2857	99 27 11	2845	101 0 41	2832
	α Aquilæ W.	50 25 10	4177	51 33 58	4108	52 43 52	4043	53 54 49	3983
	SUN E.	53 36 15	3250	52 11 5	3237	50 45 39	3225	49 19 59	3212
29	α Aquilæ W.	60 3 32	3728	61 19 49	3685	62 36 52	3645	63 54 38	3605
	Fomalhaut W.	33 47 34	3948	35 0 5	3843	36 14 23	3748	37 30 19	3663
	SUN E.	42 7 46	3146	40 40 32	3133	39 13 3	3120	37 45 18	3108
30	α Aquilæ W.	70 33 30	3437	71 55 5	3407	73 17 13	3379	74 39 53	3353
	Fomalhaut W.	44 10 40	3332	45 34 15	3281	46 58 49	3232	48 24 20	3187
	SUN E.	30 22 52	3051	28 53 42	3042	27 24 21	3034	25 54 51	3028

MEAN TIME.
LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^b .	P.L. of diff.	XVIII ^b .	P.L. of diff.	XXI ^b .	P.L. of diff.
21	Spica W.	64 17 35	2956	65 48 43	2965	67 19 39	2974	68 50 24	2983
	Fomalhaut E.	65 41 25	3339	64 17 58	3359	62 54 54	3379	61 32 13	3399
	Venus E.	85 8 36	3395	83 46 14	3407	82 24 6	3417	81 2 9	3427
	α Pegasi E.	87 1 25	3153	85 34 19	3163	84 7 26	3173	82 40 45	3183
	Sun E.	124 56 57	3335	123 33 26	3345	122 10 7	3354	120 46 58	3364
22	Spica W.	76 21 35	3021	77 51 22	3028	79 21 0	3034	80 50 31	3039
	Antares W.	30 28 0	3018	31 57 50	3025	33 27 32	3031	34 57 7	3037
	Fomalhaut E.	54 44 55	3515	53 24 47	3541	52 5 8	3568	50 45 59	3597
	Venus E.	74 15 4	3471	72 54 8	3479	71 33 20	3486	70 12 40	3493
	α Pegasi E.	75 30 18	3232	74 4 47	3243	72 39 29	3252	71 14 21	3261
	Sun E.	113 53 43	3403	112 31 30	3410	111 9 25	3416	109 47 27	3422
23	Spica W.	88 16 35	3060	89 45 33	3063	91 14 28	3065	92 43 20	3068
	Antares W.	42 23 27	3057	43 52 29	3060	45 21 27	3063	46 50 22	3065
	Fomalhaut E.	44 18 45	3774	43 3 16	3818	41 48 32	3866	40 34 38	3918
	Venus E.	63 31 1	3518	62 10 57	3523	60 50 58	3526	59 31 2	3528
	α Pegasi E.	64 11 30	3309	62 47 29	3319	61 23 39	3328	60 0 0	3339
	Sun E.	102 59 7	3445	101 37 41	3447	100 16 18	3450	98 54 58	3453
24	Spica W.	100 7 13	3070	101 36 0	3069	103 4 47	3068	104 33 36	3066
	Antares W.	54 14 32	3067	55 43 22	3066	57 12 13	3065	58 41 6	3063
	Fomalhaut E.	34 40 1	4275	33 32 45	4374	32 27 0	4484	31 22 54	4610
	Venus E.	52 51 58	3535	51 32 12	3535	50 12 27	3534	48 52 40	3533
	α Pegasi E.	53 4 48	3394	51 42 24	3406	50 20 14	3420	48 58 20	3434
	Sun E.	92 8 43	3455	90 47 28	3454	89 26 13	3452	88 4 55	3450
25	Spica W.	111 58 28	3049	113 27 40	3045	114 56 57	3039	116 26 21	3034
	Antares W.	66 6 17	3046	67 35 33	3041	69 4 55	3036	70 34 23	3030
	Venus E.	42 13 19	3521	40 53 18	3517	39 33 13	3514	38 13 4	3509
	α Pegasi E.	42 13 22	3528	40 53 29	3553	39 34 3	3581	38 15 8	3613
	Sun E.	81 17 42	3432	79 56 2	3427	78 34 16	3422	77 12 24	3416
26	Antares W.	78 3 43	2994	79 34 3	2986	81 4 33	2978	82 35 14	2969
	Venus E.	31 31 0	3485	30 10 19	3480	28 49 32	3475	27 28 40	3470
	α Pegasi E.	31 50 47	3852	30 36 38	3924	29 23 43	4009	28 12 12	4107
	Sun E.	70 21 11	3378	68 58 29	3370	67 35 38	3360	66 12 36	3351
27	Antares W.	90 11 41	2916	91 43 39	2906	93 15 50	2894	94 48 17	2882
	α Aquilæ W.	46 2 0	4501	47 5 51	4411	48 11 2	4327	49 17 30	4249
	Venus E.	20 43 16	3461	19 22 8	3465	18 1 4	3472	16 40 8	3484
	Sun E.	59 14 34	3298	57 50 20	3286	56 25 52	3275	55 1 11	3262
28	Antares W.	102 34 27	2818	104 8 31	2804	105 42 53	2791	107 17 32	2778
	α Aquilæ W.	55 6 45	3927	56 19 37	3873	57 33 24	3822	58 48 3	3774
	Sun E.	47 54 4	3198	46 27 53	3185	45 1 26	3172	43 34 44	3159
29	α Aquilæ W.	65 13 7	3568	66 32 16	3533	67 52 3	3499	69 12 29	3467
	Fomalhaut W.	38 47 46	3585	40 6 37	3514	41 26 46	3448	42 48 9	3387
	Sun E.	36 17 18	3095	34 49 2	3084	33 20 33	3072	31 51 49	3061
30	α Aquilæ W.	76 3 3	3328	77 26 42	3304	78 50 49	3282	80 15 21	3260
	Fomalhaut W.	49 50 45	3146	51 17 59	3106	52 46 1	3069	54 14 48	3034
	Sun E.	24 25 13	3023	22 55 28	3021	21 25 42	3023	19 55 58	3028

CONFIGURATIONS OF THE SATELLITES OF JUPITER,

At 8^h 30^m, MEAN TIME.

Day of the Month.	<i>West.</i>			<i>East.</i>		
1		4.	2. 3	○	1.	
2		4.	1.	○	2.	
3		4.		○	2.	3.
4		4.	2.	○	1.	3.
5	1. ○	4.		○		3. ● 2.
6		4 3.		○	2.	● 1.
7		3.	4. 2.	○		
8			1.	○	3. 2.	4.
9			1.	○	3. 2.	4.
10				○	2.	3. 4.
11			2.	○	1.	3. 4.
12			2.	○	1.	4.
13	1. ●		3.	○	2.	4.
14		3.	2.	○		4.
15		1.		○	1.	4.
16			1.	○	3. 2.	
17		4.		○	1. 2.	3.
18		4.	2.	○	1.	3.
19		4.	2.	○	1.	
20		4.	3.	○	2.	
21		4.	3.	○		1. 2.
22		4.	3. 2.	○	1.	
23		4.	1.	○	3. 2.	
24			4.	○	1. 2.	3.
25			2.	○	4.	3.
26			2.	○	1. 3.	4.
27			3.	○	1.	2. 4.
28	1. ○		3.	○	2.	4.
29	1. ●		3. 2.	○		4.
30	2. ●			1. 3. ○		4.

This Table represents, at 8^h 30^m after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h .449635. Days.	From Mean Noon of January 1.	
	At Mean Midnight,						Day of the Year.	Fraction of the Year.*
	Logarithm of							
A	B	C	D					
1	—1 ^h .2640	—0 ^m .6189	+9 ^s .6239	—0 ^h .9154	^h ^m ^s 23 18 54 ^s .31	9	90	.2464
2	1 ^h .2623	0 ^m .6534	9 ^s .6262	0 ^h .9148	23 14 58 ^s .40	10	91	.2492
3	1 ^h .2606	0 ^m .6852	9 ^s .6285	0 ^h .9141	23 11 2 ^s .49	11	92	.2519
4	—1 ^h .2587	—0 ^m .7147	+9 ^s .6308	—0 ^h .9134	23 7 6 ^s .58	12	93	.2546
5	1 ^h .2567	0 ^m .7422	9 ^s .6331	0 ^h .9126	23 3 10 ^s .67	13	94	.2574
6	1 ^h .2545	0 ^m .7679	9 ^s .6354	0 ^h .9119	22 59 14 ^s .77	14	95	.2601
7	—1 ^h .2522	—0 ^m .7920	+9 ^s .6377	—0 ^h .9111	22 55 18 ^s .86	15	96	.2628
8	1 ^h .2498	0 ^m .8148	9 ^s .6400	0 ^h .9102	22 51 22 ^s .95	16	97	.2656
9	1 ^h .2472	0 ^m .8363	9 ^s .6423	0 ^h .9094	22 47 27 ^s .04	17	98	.2683
10	—1 ^h .2445	—0 ^m .8566	+9 ^s .6446	—0 ^h .9085	22 43 31 ^s .13	18	99	.2711
11	1 ^h .2416	0 ^m .8759	9 ^s .6470	0 ^h .9076	22 39 35 ^s .23	19	100	.2738
12	1 ^h .2386	0 ^m .8942	9 ^s .6492	0 ^h .9066	22 35 39 ^s .32	20	101	.2765
13	—1 ^h .2355	—0 ^m .9116	+9 ^s .6515	—0 ^h .9056	22 31 43 ^s .41	21	102	.2793
14	1 ^h .2322	0 ^m .9283	9 ^s .6539	0 ^h .9046	22 27 47 ^s .50	22	103	.2820
15	1 ^h .2287	0 ^m .9442	9 ^s .6562	0 ^h .9036	22 23 51 ^s .59	23	104	.2847
16	—1 ^h .2251	—0 ^m .9594	+9 ^s .6586	—0 ^h .9025	22 19 55 ^s .68	24	105	.2875
17	1 ^h .2213	0 ^m .9740	9 ^s .6610	0 ^h .9015	22 15 59 ^s .77	25	106	.2902
18	1 ^h .2174	0 ^m .9879	9 ^s .6633	0 ^h .9004	22 12 3 ^s .86	26	107	.2930
19	—1 ^h .2133	—1 ^m .0013	+9 ^s .6657	—0 ^h .8993	22 8 7 ^s .96	27	108	.2957
20	1 ^h .2091	1 ^m .0142	9 ^s .6681	0 ^h .8981	22 4 12 ^s .05	28	109	.2984
21	1 ^h .2047	1 ^m .0266	9 ^s .6705	0 ^h .8970	22 0 16 ^s .14	29	110	.3012
22	—1 ^h .2001	—1 ^m .0385	+9 ^s .6729	—0 ^h .8958	21 56 20 ^s .23	30	111	.3039
23	1 ^h .1954	1 ^m .0499	9 ^s .6753	0 ^h .8946	21 52 24 ^s .32	31	112	.3066
24	1 ^h .1904	1 ^m .0609	9 ^s .6778	0 ^h .8934	21 48 28 ^s .41	32	113	.3094
25	—1 ^h .1853	—1 ^m .0716	+9 ^s .6802	—0 ^h .8922	21 44 32 ^s .50	33	114	.3121
26	1 ^h .1800	1 ^m .0818	9 ^s .6827	0 ^h .8909	21 40 36 ^s .59	34	115	.3149
27	1 ^h .1745	1 ^m .0917	9 ^s .6851	0 ^h .8897	21 36 40 ^s .68	35	116	.3176
28	—1 ^h .1688	—1 ^m .1013	+9 ^s .6876	—0 ^h .8884	21 32 44 ^s .77	36	117	.3203
29	1 ^h .1630	1 ^m .1105	9 ^s .6901	0 ^h .8871	21 28 48 ^s .86	37	118	.3231
30	1 ^h .1569	1 ^m .1194	9 ^s .6926	0 ^h .8858	21 24 52 ^s .95	38	119	.3258
31	—1 ^h .1506	—1 ^m .1280	+9 ^s .6951	—0 ^h .8845	21 20 57 ^s .04	39	120	.3285

* Add .0017 if Fraction be required for the time t , see page 363.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Sun.	1	2 32 32.04	9.548	N.15 0 6.7	45.25	I 6.02	3 0.00	0.308
Mon.	2	2 36 21.18	9.570	15 18 12.7	44.62	I 6.10	3 7.39	0.286
Tues.	3	2 40 16.88	9.593	15 36 3.5	43.97	I 6.18	3 14.24	0.263
Wed.	4	2 44 1.12	9.616	15 53 38.8	43.31	I 6.26	3 20.54	0.240
Thur.	5	2 47 51.91	9.639	16 10 58.3	42.64	I 6.34	3 26.28	0.217
Frid.	6	2 51 43.25	9.662	16 28 1.6	41.95	I 6.42	3 31.48	0.194
Sat.	7	2 55 35.15	9.685	16 44 48.5	41.25	I 6.50	3 36.13	0.171
Sun.	8	2 59 27.59	9.708	17 1 18.5	40.54	I 6.58	3 40.23	0.148
Mon.	9	3 3 20.58	9.732	17 17 31.5	39.82	I 6.67	3 43.78	0.125
Tues.	10	3 7 14.14	9.755	17 33 27.2	39.08	I 6.75	3 46.77	0.101
Wed.	11	3 11 8.25	9.778	17 49 5.2	38.33	I 6.83	3 49.22	0.078
Thur.	12	3 15 2.92	9.801	18 4 25.2	37.57	I 6.92	3 51.10	0.055
Frid.	13	3 18 58.16	9.825	18 19 27.1	36.81	I 7.00	3 52.41	0.032
Sat.	14	3 22 53.95	9.848	18 34 10.5	36.03	I 7.08	3 53.17	0.008
Sun.	15	3 26 50.31	9.872	18 48 35.2	35.24	I 7.16	3 53.37	0.015
Mon.	16	3 30 47.23	9.895	19 2 40.9	34.44	I 7.24	3 53.00	0.039
Tues.	17	3 34 44.72	9.919	19 16 27.3	33.63	I 7.32	3 52.07	0.062
Wed.	18	3 38 42.78	9.942	19 29 54.3	32.81	I 7.40	3 50.58	0.086
Thur.	19	3 42 41.40	9.966	19 43 1.4	31.97	I 7.48	3 48.52	0.109
Frid.	20	3 46 40.58	9.989	19 55 48.6	31.12	I 7.56	3 45.90	0.132
Sat.	21	3 50 40.33	10.012	20 8 15.5	30.27	I 7.64	3 42.72	0.155
Sun.	22	3 54 40.63	10.035	20 20 21.9	29.40	I 7.71	3 38.99	0.178
Mon.	23	3 58 41.48	10.058	20 32 7.5	28.53	I 7.79	3 34.70	0.201
Tues.	24	4 2 42.88	10.080	20 43 32.1	27.64	I 7.86	3 29.87	0.223
Wed.	25	4 6 44.81	10.102	20 54 35.5	26.74	I 7.93	3 24.52	0.245
Thur.	26	4 10 47.27	10.124	21 5 17.3	25.83	I 8.00	3 18.63	0.267
Frid.	27	4 14 50.24	10.145	21 15 37.4	24.92	I 8.07	3 12.24	0.288
Sat.	28	4 18 53.71	10.165	21 25 35.5	24.00	I 8.13	3 5.34	0.307
Sun.	29	4 22 57.67	10.184	21 35 11.4	23.06	I 8.20	2 57.97	0.326
Mon.	30	4 27 2.08	10.202	21 44 24.9	22.12	I 8.26	2 50.14	0.345
Tues.	31	4 31 6.94	10.220	21 53 15.7	21.17	I 8.32	2 41.85	0.363
Wed.	32	4 35 12.23		N.22 1 43.7		I 8.38	2 33.14	

* Mean Time of the Semidiameter passing may be found by subtracting 0'.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
		h m s	° ' "	' "	m s	h m s
Sun.	1	2 32 32.52	N.15 0 9.0	15 54.0	3 0.01	2 35 32.53
Mon.	2	2 36 21.68	15 18 15.0	15 53.8	3 7.40	2 39 29.08
Tues.	3	2 40 11.39	15 36 5.9	15 53.5	3 14.25	2 43 25.64
Wed.	4	2 44 1.65	15 53 41.2	15 53.3	3 20.55	2 47 22.20
Thur.	5	2 47 52.46	16 11 0.7	15 53.0	3 26.29	2 51 18.75
Frid.	6	2 51 43.82	16 28 4.1	15 52.8	3 31.49	2 55 15.31
Sat.	7	2 55 35.73	16 44 51.0	15 52.6	3 36.14	2 59 11.86
Sun.	8	2 59 28.18	17 1 21.0	15 52.4	3 40.24	3 3 8.42
Mon.	9	3 3 21.19	17 17 34.0	15 52.2	3 43.79	3 7 4.98
Tues.	10	3 7 14.75	17 33 29.6	15 52.0	3 46.78	3 11 1.53
Wed.	11	3 11 8.87	17 49 7.6	15 51.8	3 49.22	3 14 58.09
Thur.	12	3 15 3.55	18 4 27.7	15 51.6	3 51.10	3 18 54.65
Frid.	13	3 18 58.79	18 19 29.5	15 51.4	3 52.41	3 22 51.20
Sat.	14	3 22 54.59	18 34 12.8	15 51.2	3 53.17	3 26 47.76
Sun.	15	3 26 50.95	18 48 37.5	15 51.0	3 53.37	3 30 44.32
Mon.	16	3 30 47.87	19 2 43.1	15 50.9	3 53.00	3 34 40.87
Tues.	17	3 34 45.36	19 16 29.5	15 50.7	3 52.07	3 38 37.43
Wed.	18	3 38 43.42	19 29 56.4	15 50.5	3 50.57	3 42 33.99
Thur.	19	3 42 42.03	19 43 3.5	15 50.3	3 48.51	3 46 30.55
Frid.	20	3 46 41.21	19 55 50.6	15 50.1	3 45.89	3 50 27.10
Sat.	21	3 50 40.95	20 8 17.4	15 50.0	3 42.71	3 54 23.66
Sun.	22	3 54 41.24	20 20 23.7	15 49.8	3 38.98	3 58 20.22
Mon.	23	3 58 42.08	20 32 9.2	15 49.6	3 34.69	4 2 16.77
Tues.	24	4 2 43.47	20 43 33.7	15 49.4	3 29.86	4 6 13.33
Wed.	25	4 6 45.38	20 54 37.0	15 49.2	3 24.51	4 10 9.89
Thur.	26	4 10 47.83	21 5 18.7	15 49.1	3 18.62	4 14 6.45
Frid.	27	4 14 50.79	21 15 38.7	15 48.9	3 12.22	4 18 3.01
Sat.	28	4 18 54.24	21 25 36.7	15 48.7	3 5.32	4 21 59.56
Sun.	29	4 22 58.17	21 35 12.5	15 48.6	2 57.95	4 25 56.12
Mon.	30	4 27 2.56	21 44 25.9	15 48.4	2 50.12	4 29 52.68
Tues.	31	4 31 7.40	21 53 16.7	15 48.3	2 41.83	4 33 49.24
Wed.	32	4 35 12.67	N.22 1 44.6	15 48.2	2 33.12	4 37 45.79

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	40° 33' 30.5"	N. 0° 70'	0.0035424	15° 40.3'	15° 45.9'	57° 22.9'	57° 43.5'
2	41° 31' 41.7"	0° 75'	0.0036495	15° 51.3'	15° 56.3'	58° 3.2'	58° 21.6'
3	42° 29' 51.2"	0° 77'	0.0037549	16° 0.9'	16° 5.0'	58° 38.4'	58° 53.2'
4	43° 27' 58.9"	0° 76'	0.0038586	16° 8.5'	16° 11.3'	59° 6.0'	59° 16.4'
5	44° 26' 4.8"	0° 72'	0.0039607	16° 13.5'	16° 15.1'	59° 24.4'	59° 30.1'
6	45° 24' 8.9"	0° 65'	0.0040612	16° 16.0'	16° 16.3'	59° 33.4'	59° 34.6'
7	46° 22' 11.2"	0° 55'	0.0041600	16° 16.0'	16° 15.3'	59° 33.7'	59° 30.9'
8	47° 20' 11.5"	0° 43'	0.0042572	16° 14.1'	16° 12.5'	59° 26.5'	59° 20.6'
9	48° 18' 9.9"	0° 30'	0.0043530	16° 10.5'	16° 8.2'	59° 13.4'	59° 5.1'
10	49° 16' 6.5"	0° 17'	0.0044474	16° 5.7'	16° 2.9'	58° 55.8'	58° 45.8'
11	50° 14' 1.2"	N. 0° 03'	0.0045406	16° 0.0'	15° 56.8'	58° 34.9'	58° 23.4'
12	51° 11' 54.2"	S. 0° 10'	0.0046326	15° 53.5'	15° 50.0'	58° 11.3'	57° 58.5'
13	52° 9' 45.5"	0° 22'	0.0047236	15° 46.4'	15° 42.6'	57° 45.2'	57° 31.4'
14	53° 7' 35.0"	0° 32'	0.0048138	15° 38.7'	15° 34.7'	57° 17.0'	57° 2.3'
15	54° 5' 23.0"	0° 39'	0.0049030	15° 30.6'	15° 26.4'	56° 47.2'	56° 31.9'
16	55° 3' 9.4"	0° 43'	0.0049913	15° 22.2'	15° 18.0'	56° 16.5'	56° 1.1'
17	56° 0' 54.4"	0° 44'	0.0050787	15° 13.8'	15° 9.8'	55° 46.0'	55° 31.2'
18	56° 58' 38.0"	0° 42'	0.0051651	15° 6.0'	15° 2.3'	55° 17.1'	55° 3.8'
19	57° 56' 20.3"	0° 38'	0.0052506	14° 59.0'	14° 56.0'	54° 51.5'	54° 40.6'
20	58° 54' 1.5"	0° 30'	0.0053352	14° 53.4'	14° 51.3'	54° 31.1'	54° 23.3'
21	59° 51' 41.5"	0° 20'	0.0054186	14° 49.6'	14° 48.6'	54° 17.4'	54° 13.6'
22	60° 49' 20.4"	S. 0° 09'	0.0055008	14° 48.2'	14° 48.4'	54° 12.0'	54° 12.8'
23	61° 46' 58.4"	N. 0° 03'	0.0055816	14° 49.2'	14° 50.7'	54° 15.8'	54° 21.4'
24	62° 44' 35.4"	0° 16'	0.0056609	14° 53.0'	14° 55.9'	54° 29.6'	54° 40.3'
25	63° 42' 11.5"	0° 29'	0.0057386	14° 59.5'	15° 3.7'	54° 53.4'	55° 9.0'
26	64° 39' 46.7"	0° 40'	0.0058145	15° 8.6'	15° 14.1'	55° 26.9'	55° 46.8'
27	65° 37' 21.1"	0° 50'	0.0058885	15° 20.0'	15° 26.4'	56° 8.6'	56° 31.9'
28	66° 34' 54.6"	0° 58'	0.0059604	15° 33.0'	15° 39.9'	56° 56.3'	57° 21.5'
29	67° 32' 27.1"	0° 63'	0.0060302	15° 46.9'	15° 53.8'	57° 47.0'	58° 12.2'
30	68° 29' 58.7"	0° 65'	0.0060978	16° 0.4'	16° 6.7'	58° 36.5'	58° 59.5'
31	69° 27' 29.4"	0° 64'	0.0061630	16° 12.4'	16° 17.5'	59° 20.5'	59° 39.0'
32	70° 24' 59.1"	N. 0° 61'	0.0062258	16° 21.8'	16° 25.2'	59° 54.8'	60° 7.2'

MEAN TIME.

Day of the Week.	Day of the Month.	THE MOON'S					
		Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
		^o ['] ["]	^o ['] ["]	^o ['] ["]	^o ['] ["]	^d	^h ^m
Sun.	1	22 34 59.9	29 19 13.6	N. 4 10 45.2	N. 4 28 40.6	28.1	23 28.2
Mon.	2	36 8 39.4	43 2 54.7	4 42 59.3	4 53 20.2	29.1	6
Tues.	3	50 1 30.7	57 3 52.8	4 59 25.6	5 1 2.4	0.6	0 21.9
Wed.	4	64 9 21.7	71 17 15.6	4 58 2.3	4 50 22.9	1.6	1 20.4
Thur.	5	78 26 52.0	85 37 28.9	4 38 8.4	4 21 28.3	2.6	2 22.6
Frid.	6	92 48 27.1	99 59 11.3	4 0 38.3	3 35 59.4	3.6	3 26.0
Sat.	7	107 9 11.2	114 18 1.6	3 7 57.0	2 37 0.9	4.6	4 27.7
Sun.	8	121 25 22.9	128 31 0.8	2 3 41.5	1 28 34.4	5.6	5 25.7
Mon.	9	135 34 45.2	142 36 30.2	N. 0 52 14.0	N. 0 15 15.4	6.6	6 19.4
Tues.	10	149 36 11.8	156 33 48.1	S. 0 21 46.0	S. 0 58 15.9	7.6	7 9.4
Wed.	11	163 29 17.8	170 22 39.2	1 33 42.3	2 7 33.3	8.6	7 56.8
Thur.	12	177 13 50.0	184 2 45.8	2 39 20.6	3 8 38.7	9.6	8 42.9
Frid.	13	190 49 21.7	197 33 30.1	3 35 4.2	3 58 18.1	10.6	9 29.0
Sat.	14	204 15 2.2	210 53 47.8	4 18 3.3	4 34 8.2	11.6	10 16.3
Sun.	15	217 29 36.3	224 2 17.1	4 46 24.5	4 54 47.2	12.6	11 5.5
Mon.	16	230 31 39.9	236 57 36.1	4 59 15.2	4 59 51.1	13.6	11 56.8
Tues.	17	243 19 59.5	249 38 47.1	4 56 40.9	4 49 52.6	14.6	12 49.9
Wed.	18	255 53 58.6	262 5 38.2	4 39 37.4	4 26 7.8	15.6	13 43.5
Thur.	19	268 13 53.6	274 18 57.8	4 9 38.7	3 50 25.1	16.6	14 36.3
Frid.	20	280 21 7.4	286 20 43.3	3 28 42.9	3 4 49.0	17.6	15 27.0
Sat.	21	292 18 10.5	298 13 57.3	2 38 59.9	2 11 32.4	18.6	16 14.9
Sun.	22	304 8 35.1	310 2 38.1	1 42 42.7	1 12 48.1	19.6	16 59.9
Mon.	23	315 56 44.0	321 51 31.1	S. 0 42 4.7	S. 0 10 49.4	20.6	17 42.6
Tues.	24	327 47 39.4	333 45 50.0	N. 0 20 40.8	N. 0 52 8.6	21.6	18 23.8
Wed.	25	339 46 44.2	345 51 2.7	1 23 15.9	1 53 43.6	22.6	19 4.5
Thur.	26	351 59 25.0	358 12 28.3	2 23 12.3	2 51 20.6	23.6	19 46.0
Frid.	27	4 30 46.4	10 54 48.9	3 17 46.2	3 42 6.3	24.6	20 29.5
Sat.	28	17 24 59.8	24 1 35.9	4 3 56.4	4 22 52.3	25.6	21 16.4
Sun.	29	30 44 46.1	37 34 30.0	4 38 29.1	4 50 23.6	26.6	22 7.9
Mon.	30	44 30 37.4	51 32 47.7	4 58 13.7	5 1 41.0	27.6	23 4.9
Tues.	31	58 40 30.1	65 53 3.9	5 0 31.1	4 54 34.6	28.6	6
Wed.	32	73 9 40.6	80 29 25.1	N. 4 43 48.7	N. 4 28 18.4	0.2	0 6.8

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
SUNDAY 1.				TUESDAY 3.			
	<i>h m s.</i>	<i>N. ° ' "</i>	<i>"</i>		<i>h m s.</i>	<i>N. ° ' "</i>	<i>"</i>
0	1 17 10.01	N. 12 40 10.7	140.63	0	3 4 30.31	N. 22 33 51.8	99.17
1	1 19 14.41	12 54 14.5	140.16	1	3 6 55.48	22 43 46.8	97.86
2	1 21 19.17	13 8 15.4	139.67	2	3 9 21.10	22 53 34.0	96.54
3	1 23 24.30	13 22 13.5	139.17	3	3 11 47.17	23 3 13.3	95.20
4	1 25 29.81	13 36 8.6	138.66	4	3 14 13.70	23 12 44.6	93.85
5	1 27 35.69	13 50 0.5	138.13	5	3 16 40.67	23 22 7.7	92.47
6	1 29 41.96	14 3 49.3	137.58	6	3 19 8.09	23 31 22.5	91.08
7	1 31 48.61	14 17 34.8	137.02	7	3 21 35.95	23 40 29.0	89.67
8	1 33 55.65	14 31 17.0	136.44	8	3 24 4.25	23 49 27.1	88.24
9	1 36 3.09	14 44 55.7	135.85	9	3 26 32.99	23 58 16.6	86.80
10	1 38 10.92	14 58 30.8	135.24	10	3 29 2.16	24 6 57.4	85.34
11	1 40 19.15	15 12 2.2	134.61	11	3 31 31.77	24 15 29.4	83.86
12	1 42 27.79	15 25 29.9	133.97	12	3 34 1.79	24 23 52.6	82.36
13	1 44 36.84	15 38 53.7	133.31	13	3 36 32.24	24 32 6.8	80.84
14	1 46 46.30	15 52 13.6	132.63	14	3 39 3.12	24 40 11.9	79.31
15	1 48 56.17	16 5 29.5	131.94	15	3 41 34.40	24 48 7.8	77.77
16	1 51 6.47	16 18 41.2	131.23	16	3 44 6.09	24 55 54.4	76.20
17	1 53 17.18	16 31 48.6	130.51	17	3 46 38.19	25 3 31.6	74.62
18	1 55 28.32	16 44 51.6	129.76	18	3 49 10.68	25 10 59.4	73.03
19	1 57 39.89	16 57 50.2	129.00	19	3 51 43.57	25 18 17.6	71.42
20	1 59 51.88	17 10 44.2	128.22	20	3 54 16.85	25 25 26.1	69.79
21	2 2 4.31	17 23 33.6	127.43	21	3 56 50.51	25 32 24.9	68.15
22	2 4 17.17	17 36 18.2	126.62	22	3 59 24.54	25 39 13.8	66.49
23	2 6 30.47	N. 17 48 57.9	125.79	23	4 1 58.94	N. 25 45 52.8	64.82
MONDAY 2.				WEDNESDAY 4.			
	<i>h m s.</i>	<i>N. ° ' "</i>	<i>"</i>		<i>h m s.</i>	<i>N. ° ' "</i>	<i>"</i>
0	2 8 44.21	N. 18 1 32.7	124.94	0	4 4 33.71	N. 25 52 21.7	63.13
1	2 10 58.39	18 14 2.4	124.07	1	4 7 8.84	25 58 40.5	61.43
2	2 13 13.02	18 26 26.8	123.19	2	4 9 44.31	26 4 49.1	59.72
3	2 15 28.10	18 38 46.0	122.29	3	4 12 20.13	26 10 47.5	57.99
4	2 17 43.62	18 50 59.8	121.37	4	4 14 56.29	26 16 35.4	56.25
5	2 19 59.60	19 3 8.0	120.43	5	4 17 32.77	26 22 12.9	54.49
6	2 22 16.03	19 15 10.6	119.48	6	4 20 9.57	26 27 39.9	52.73
7	2 24 32.91	19 27 7.5	118.50	7	4 22 46.68	26 32 56.3	50.95
8	2 26 50.25	19 38 58.6	117.51	8	4 25 24.09	26 38 2.0	49.15
9	2 29 8.05	19 50 43.7	116.50	9	4 28 1.80	26 42 57.0	47.35
10	2 31 26.30	20 2 22.7	115.47	10	4 30 39.80	26 47 41.1	45.54
11	2 33 45.01	20 13 55.6	114.43	11	4 33 18.08	26 52 14.4	43.71
12	2 36 4.19	20 25 22.2	113.37	12	4 35 56.62	26 56 36.7	41.88
13	2 38 23.83	20 36 42.4	112.28	13	4 38 35.43	27 0 48.0	40.03
14	2 40 43.92	20 47 56.1	111.18	14	4 41 14.49	27 4 48.2	38.17
15	2 43 4.49	20 59 3.2	110.06	15	4 43 53.79	27 8 37.2	36.30
16	2 45 25.51	21 10 3.6	108.92	16	4 46 33.32	27 12 15.1	34.43
17	2 47 46.99	21 20 57.2	107.77	17	4 49 13.07	27 15 41.7	32.54
18	2 50 8.94	21 31 43.8	106.59	18	4 51 53.03	27 18 57.0	30.65
19	2 52 31.35	21 42 23.4	105.40	19	4 54 33.20	27 22 0.9	28.75
20	2 54 54.22	21 52 55.8	104.19	20	4 57 13.56	27 24 53.5	26.84
21	2 57 17.55	22 3 21.0	102.96	21	4 59 54.10	27 27 34.6	24.93
22	2 59 41.35	22 13 38.8	101.71	22	5 2 34.81	27 30 4.2	23.01
23	3 2 5.60	22 23 49.1	100.45	23	5 5 15.68	27 32 22.2	21.08
24	3 4 30.21	N. 22 32 51.8		24	5 7 56.70	N. 27 24 28.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 5.				SATURDAY 7.			
0	^h 5 ^m 7 ^s 56.70	N.27 34 28.7	19.14	0	^h 7 ^m 16 ^s 8.81	N.25 27 53.4	71.75
1	5 10 37.86	27 36 23.6	17.20	1	7 18 44.21	25 20 42.9	73.43
2	5 13 19.15	27 38 6.8	15.26	2	7 21 19.27	25 13 22.3	75.10
3	5 16 0.56	27 39 38.4	13.31	3	7 23 53.99	25 5 51.6	76.76
4	5 18 42.07	27 40 58.2	11.35	4	7 26 28.37	24 58 11.0	78.40
5	5 21 23.68	27 42 6.4	9.40	5	7 29 2.39	24 50 20.6	80.03
6	5 24 5.37	27 43 2.8	7.44	6	7 31 36.06	24 42 20.4	81.64
7	5 26 47.14	27 43 47.4	5.47	7	7 34 9.37	24 34 10.5	83.24
8	5 29 28.96	27 44 20.3	3.51	8	7 36 42.32	24 25 51.0	84.83
9	5 32 10.84	27 44 41.4	1.54	9	7 39 14.90	24 17 22.0	86.40
10	5 34 52.76	27 44 50.7	0.41	10	7 41 47.10	24 8 43.6	87.95
11	5 37 34.70	27 44 48.2	2.38	11	7 44 18.93	23 59 55.9	89.49
12	5 40 16.66	27 44 33.9	4.35	12	7 46 50.37	23 50 58.9	91.02
13	5 42 58.63	27 44 7.7	6.32	13	7 49 21.43	23 41 52.8	92.52
14	5 45 40.59	27 43 29.8	8.29	14	7 51 52.10	23 32 37.6	94.01
15	5 48 22.53	27 42 40.0	10.26	15	7 54 22.38	23 23 13.5	95.48
16	5 51 4.44	27 41 38.5	12.22	16	7 56 52.26	23 13 40.6	96.94
17	5 53 46.32	27 40 25.1	14.18	17	7 59 21.75	23 3 58.9	98.38
18	5 56 28.15	27 39 0.0	16.14	18	8 1 50.85	22 54 8.6	99.80
19	5 59 9.91	27 37 23.1	18.10	19	8 4 19.54	22 44 9.8	101.20
20	6 1 51.60	27 35 34.4	20.06	20	8 6 47.83	22 34 2.6	102.59
21	6 4 33.21	27 33 34.0	22.01	21	8 9 15.72	22 23 47.0	103.96
22	6 7 14.73	27 31 22.0	23.95	22	8 11 43.20	22 13 23.2	105.32
23	6 9 56.14	N.27 28 58.2	25.90	23	8 14 10.28	N.22 2 51.2	106.65
FRIDAY 6.				SUNDAY 8.			
0	6 12 37.44	N.27 26 22.8	27.84	0	8 16 36.96	N.21 52 11.3	107.97
1	6 15 18.61	27 23 35.7	29.77	1	8 19 3.22	21 41 23.5	109.27
2	6 17 59.65	27 20 37.1	31.69	2	8 21 29.08	21 30 27.8	110.55
3	6 20 40.54	27 17 27.0	33.61	3	8 23 54.52	21 19 24.5	111.82
4	6 23 21.27	27 14 5.3	35.52	4	8 26 19.56	21 8 13.6	113.07
5	6 26 1.83	27 10 32.1	37.43	5	8 28 44.18	20 56 55.1	114.30
6	6 28 42.22	27 6 47.5	39.32	6	8 31 8.40	20 45 29.3	115.52
7	6 31 22.42	27 2 51.5	41.21	7	8 33 32.21	20 33 56.2	116.71
8	6 34 2.43	26 58 44.2	43.09	8	8 35 55.61	20 22 15.9	117.89
9	6 36 42.23	26 54 25.6	44.97	9	8 38 18.61	20 10 28.5	119.06
10	6 39 21.82	26 49 55.8	46.83	10	8 40 41.19	19 58 34.1	120.20
11	6 42 1.18	26 45 14.8	48.68	11	8 43 3.38	19 46 32.8	121.33
12	6 44 40.31	26 40 22.7	50.53	12	8 45 25.15	19 34 24.8	122.44
13	6 47 19.20	26 35 19.5	52.36	13	8 47 46.52	19 22 10.1	123.54
14	6 49 57.84	26 30 5.3	54.19	14	8 50 7.49	19 9 48.8	124.61
15	6 52 36.22	26 24 40.1	56.00	15	8 52 28.06	18 57 21.1	125.67
16	6 55 14.34	26 19 4.1	57.80	16	8 54 48.23	18 44 47.0	126.72
17	6 57 52.18	26 13 17.3	59.58	17	8 57 8.01	18 32 6.7	127.74
18	7 0 29.74	26 7 19.8	61.36	18	8 59 27.39	18 19 20.2	128.75
19	7 3 7.02	26 1 11.6	63.12	19	9 1 46.38	18 6 27.7	129.74
20	7 5 43.99	25 54 52.8	64.88	20	9 4 4.98	17 53 29.3	130.71
21	7 8 20.67	25 48 23.5	66.61	21	9 6 23.19	17 40 25.0	131.67
22	7 10 57.03	25 41 43.8	68.34	22	9 8 41.02	17 27 15.0	132.61
23	7 13 33.08	25 34 53.7	70.05	23	9 10 58.47	17 13 59.3	133.53
24	7 16 8.81	N.25 27 53.4		24	9 13 15.53	N.17 0 38.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 9.				WEDNESDAY 11.			
0	h m s	N. ° ' "	"	0	h m s	N. ° ' "	"
1	9 13 15.53	N. 17 0 38.1	134.43	1	10 56 44.41	N. 5 3 16.0	159.09
2	9 15 32.22	16 47 11.5	135.32	2	10 58 47.93	4 47 21.4	159.24
3	9 17 48.53	16 33 39.5	136.19	3	11 0 51.29	4 31 25.9	159.38
4	9 20 4.48	16 20 2.4	137.04	4	11 2 54.51	4 15 29.6	159.51
5	9 22 20.05	16 6 20.1	137.88	5	11 4 57.58	3 59 32.5	159.62
6	9 24 35.26	15 52 32.8	138.70	6	11 7 0.52	3 43 34.8	159.72
7	9 26 50.12	15 38 40.6	139.50	7	11 9 3.32	3 27 36.5	159.80
8	9 29 4.61	15 24 43.5	140.29	8	11 11 5.99	3 11 37.6	159.87
9	9 31 18.75	15 10 41.7	141.06	9	11 13 8.53	2 55 38.4	159.93
10	9 33 32.54	14 56 35.4	141.81	10	11 15 10.96	2 39 38.8	159.98
11	9 35 45.99	14 42 24.5	142.55	11	11 17 13.28	2 23 38.9	160.01
12	9 37 59.10	14 28 9.1	143.27	12	11 19 15.48	2 7 38.8	160.03
13	9 40 11.87	14 13 49.5	143.97	13	11 21 17.59	1 51 38.6	160.03
14	9 42 24.30	13 59 25.6	144.66	14	11 23 19.60	1 35 38.4	160.03
15	9 44 36.40	13 44 57.6	145.33	15	11 25 21.51	1 19 38.2	160.01
16	9 46 48.18	13 30 25.6	145.99	16	11 27 23.34	1 3 38.1	159.97
17	9 48 59.63	13 15 49.7	146.63	17	11 29 25.09	0 47 38.3	159.93
18	9 51 10.77	13 1 9.9	147.25	18	11 31 26.76	0 31 38.7	159.87
19	9 53 21.59	12 46 26.4	147.86	19	11 33 28.36	N. 0 15 39.4	159.80
20	9 55 32.11	12 31 39.2	148.45	20	11 35 29.89	S. 0 0 19.4	159.71
21	9 57 42.33	12 16 48.5	149.02	21	11 37 31.36	0 16 17.7	159.61
22	9 59 52.24	12 1 54.3	149.58	22	11 39 32.77	0 32 15.4	159.50
23	10 2 1.86	11 46 56.8	150.13	23	11 41 34.13	0 48 12.5	159.38
24	10 4 11.19	N. 11 31 56.0	150.66	24	11 43 35.44	S. 1 4 8.8	159.25
TUESDAY 10.				THURSDAY 12.			
0	10 6 20.23	N. 11 16 52.0	151.17	0	11 45 36.71	S. 1 20 4.3	159.10
1	10 8 28.99	11 1 44.9	151.67	1	11 47 37.94	1 35 58.9	158.94
2	10 10 37.48	10 46 34.9	152.15	2	11 49 39.14	1 51 52.6	158.77
3	10 12 45.70	10 31 21.9	152.62	3	11 51 40.31	2 7 45.2	158.58
4	10 14 53.65	10 16 6.1	153.08	4	11 53 41.46	2 23 36.7	158.38
5	10 17 1.34	10 0 47.7	153.52	5	11 55 42.60	2 39 27.0	158.17
6	10 19 8.77	9 45 26.6	153.94	6	11 57 43.72	2 55 16.1	157.95
7	10 21 15.95	9 30 2.9	154.35	7	11 59 44.83	3 11 3.8	157.71
8	10 23 22.89	9 14 36.8	154.74	8	12 1 45.94	3 26 50.1	157.46
9	10 25 29.58	8 59 8.3	155.12	9	12 3 47.05	3 42 34.9	157.20
10	10 27 36.04	8 43 37.5	155.49	10	12 5 48.17	3 58 18.2	156.93
11	10 29 42.26	8 28 4.5	155.84	11	12 7 49.30	4 13 59.8	156.65
12	10 31 48.26	8 12 29.5	156.18	12	12 9 50.45	4 29 39.7	156.35
13	10 33 54.04	7 56 52.4	156.50	13	12 11 51.62	4 45 17.8	156.04
14	10 35 59.60	7 41 13.4	156.81	14	12 13 52.81	5 0 54.0	155.71
15	10 38 4.94	7 25 32.5	157.10	15	12 15 54.03	5 16 28.4	155.38
16	10 40 10.09	7 9 49.9	157.38	16	12 17 55.29	5 32 0.7	155.03
17	10 42 15.03	6 54 5.6	157.64	17	12 19 56.58	5 47 30.9	154.67
18	10 44 19.77	6 38 19.7	157.89	18	12 21 57.92	6 2 59.0	154.30
19	10 46 24.32	6 22 32.4	158.13	19	12 23 59.30	6 18 24.8	153.92
20	10 48 28.69	6 6 43.6	158.35	20	12 26 0.74	6 33 48.3	153.52
21	10 50 32.88	5 50 53.5	158.56	21	12 28 2.23	6 49 9.5	153.12
22	10 52 36.89	5 35 2.1	158.75	22	12 30 3.79	7 4 28.3	152.70
23	10 54 40.73	5 19 9.6	158.93	23	12 32 5.41	7 19 44.5	152.27
24	10 56 44.41	N. 5 3 16.0		24	12 34 7.09	S. 7 34 58.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 13.				SUNDAY 15.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	12 34 7.09	S. 7 34 58.1	151.83	0	14 13 59.49	S. 18 31 50.3	116.69
1	12 36 8.85	7 50 9.1	151.37	1	14 16 8.63	18 43 30.5	115.68
2	12 38 10.69	8 5 17.3	150.90	2	14 18 17.96	18 55 4.6	114.66
3	12 40 12.61	8 20 22.8	150.42	3	14 20 27.51	19 6 32.6	113.63
4	12 42 14.61	8 35 25.4	149.93	4	14 22 37.26	19 17 54.4	112.59
5	12 44 16.71	8 50 25.0	149.43	5	14 24 47.22	19 29 9.9	111.54
6	12 46 18.90	9 5 21.6	148.91	6	14 26 57.39	19 40 19.2	110.48
7	12 48 21.18	9 20 15.1	148.38	7	14 29 7.76	19 51 22.1	109.40
8	12 50 23.57	9 35 5.4	147.84	8	14 31 18.34	20 2 18.5	108.33
9	12 52 26.06	9 49 52.5	147.29	9	14 33 29.13	20 13 8.5	107.23
10	12 54 28.66	10 4 36.3	146.73	10	14 35 40.13	20 23 51.9	106.13
11	12 56 31.37	10 19 16.7	146.15	11	14 37 51.33	20 34 28.7	105.01
12	12 58 34.20	10 33 53.6	145.56	12	14 40 2.75	20 44 58.8	103.89
13	13 0 37.15	10 48 27.0	144.96	13	14 42 14.37	20 55 22.2	102.76
14	13 2 40.22	11 2 56.8	144.35	14	14 44 26.20	21 5 38.8	101.62
15	13 4 43.42	11 17 22.9	143.72	15	14 46 38.24	21 15 48.5	100.46
16	13 6 46.75	11 31 45.3	143.09	16	14 48 50.48	21 25 51.3	99.30
17	13 8 50.22	11 46 3.8	142.44	17	14 51 2.92	21 35 47.2	98.13
18	13 10 53.82	12 0 18.5	141.78	18	14 53 15.57	21 45 36.0	96.95
19	13 12 57.56	12 14 29.3	141.11	19	14 55 28.42	21 55 17.7	95.76
20	13 15 1.45	12 28 36.0	140.43	20	14 57 41.47	22 4 52.3	94.57
21	13 17 5.48	12 42 38.6	139.74	21	14 59 54.73	22 14 19.7	93.36
22	13 19 9.66	12 56 37.1	139.03	22	15 2 8.18	22 23 39.9	92.14
23	13 21 14.00	S. 13 10 31.3	138.32	23	15 4 21.83	S. 22 32 52.8	90.92
SATURDAY 14.				MONDAY 16.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	13 23 18.50	S. 13 24 21.2	137.59	0	15 6 35.67	S. 22 41 58.4	89.69
1	13 25 23.15	13 38 6.8	136.85	1	15 8 49.71	22 50 56.6	88.44
2	13 27 27.97	13 51 47.9	136.10	2	15 11 3.94	22 59 47.2	87.19
3	13 29 32.94	14 5 24.5	135.34	3	15 13 18.37	23 8 30.4	85.94
4	13 31 38.09	14 18 56.6	134.56	4	15 15 32.98	23 17 6.1	84.67
5	13 33 43.40	14 32 24.0	133.77	5	15 17 47.78	23 25 34.1	83.40
6	13 35 48.89	14 45 46.6	132.98	6	15 20 2.76	23 33 54.5	82.11
7	13 37 54.55	14 59 4.5	132.17	7	15 22 17.92	23 42 7.2	80.82
8	13 40 0.39	15 12 17.6	131.35	8	15 24 33.26	23 50 12.2	79.53
9	13 42 6.41	15 25 25.7	130.51	9	15 26 48.78	23 58 9.4	78.22
10	13 44 12.60	15 38 28.8	129.67	10	15 29 4.47	24 5 58.7	76.91
11	13 46 18.99	15 51 26.9	128.82	11	15 31 20.33	24 13 40.2	75.59
12	13 48 25.55	16 4 19.8	127.95	12	15 33 36.37	24 21 13.8	74.26
13	13 50 32.31	16 17 7.5	127.07	13	15 35 52.57	24 28 39.4	72.93
14	13 52 39.25	16 29 50.0	126.18	14	15 38 8.92	24 35 57.0	71.59
15	13 54 46.39	16 42 27.1	125.28	15	15 40 25.44	24 43 6.6	70.24
16	13 56 53.72	16 54 58.8	124.37	16	15 42 42.11	24 50 8.0	68.89
17	13 59 1.24	17 7 25.1	123.45	17	15 44 58.93	24 57 1.4	67.53
18	14 1 8.97	17 19 45.8	122.52	18	15 47 15.90	25 3 46.6	66.16
19	14 3 16.89	17 32 0.9	121.57	19	15 49 33.02	25 10 23.6	64.79
20	14 5 25.00	17 44 10.4	120.62	20	15 51 50.27	25 16 52.4	63.41
21	14 7 33.32	17 56 14.2	119.65	21	15 54 7.66	25 23 12.9	62.03
22	14 9 41.84	18 8 12.1	118.67	22	15 56 25.19	25 29 25.1	60.64
23	14 11 50.56	18 20 4.2	117.69	23	15 58 42.84	25 35 29.0	59.25
24	14 13 59.49	S. 18 31 50.3		24	16 1 0.62	S. 25 41 24.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 17.				THURSDAY 19.			
0	h m s 16 1 0.62	S. 25 41 24.5	57.85	0	h m s 17 52 2.28	S. 27 36 29.7	11.39
1	16 3 18.52	25 47 11.6	56.44	1	17 54 19.84	27 35 21.3	12.80
2	16 5 36.54	25 52 50.3	55.04	2	17 56 37.26	27 34 4.5	14.20
3	16 7 54.67	25 58 20.5	53.62	3	17 58 54.53	27 32 39.3	15.60
4	16 10 12.90	26 3 42.3	52.21	4	18 1 11.65	27 31 5.7	16.99
5	16 12 31.24	26 8 55.6	50.78	5	18 3 28.61	27 29 23.7	18.38
6	16 14 49.67	26 14 0.3	49.36	6	18 5 45.41	27 27 33.4	19.76
7	16 17 8.20	26 18 56.5	47.93	7	18 8 2.05	27 25 34.8	21.14
8	16 19 26.82	26 23 44.1	46.50	8	18 10 18.52	27 23 28.0	22.51
9	16 21 45.52	26 28 23.1	45.06	9	18 12 34.82	27 21 12.9	23.87
10	16 24 4.30	26 32 53.5	43.62	10	18 14 50.93	27 18 49.6	25.23
11	16 26 23.15	26 37 15.3	42.18	11	18 17 6.86	27 16 18.2	26.59
12	16 28 42.07	26 41 28.4	40.74	12	18 19 22.60	27 13 38.6	27.94
13	16 31 1.05	26 45 32.9	39.29	13	18 21 38.15	27 10 50.9	29.28
14	16 33 20.09	26 49 28.6	37.84	14	18 23 53.50	27 7 55.2	30.61
15	16 35 39.19	26 53 15.7	36.39	15	18 26 8.65	27 4 51.5	31.94
16	16 37 58.33	26 56 54.1	34.94	16	18 28 23.60	27 1 39.8	33.27
17	16 40 17.51	27 0 23.8	33.48	17	18 30 38.34	26 58 20.2	34.58
18	16 42 36.73	27 3 44.7	32.03	18	18 32 52.87	26 54 52.7	35.89
19	16 44 55.97	27 6 56.9	30.57	19	18 35 7.18	26 51 17.3	37.19
20	16 47 15.25	27 10 0.3	29.11	20	18 37 21.27	26 47 34.1	38.49
21	16 49 34.54	27 12 55.0	27.65	21	18 39 35.14	26 43 43.1	39.78
22	16 51 53.85	27 15 40.9	26.19	22	18 41 48.78	26 39 44.4	41.06
23	16 54 13.17	S. 27 18 18.0	24.72	23	18 44 2.19	S. 26 35 38.0	42.34
WEDNESDAY 18.				FRIDAY 20.			
0	16 56 32.49	S. 27 20 46.4	23.26	0	18 46 15.37	S. 26 31 24.0	43.60
1	16 58 51.81	27 23 6.0	21.80	1	18 48 28.31	26 27 2.4	44.86
2	17 1 11.12	27 25 16.8	20.34	2	18 50 41.02	26 22 33.2	46.11
3	17 3 30.42	27 27 18.8	18.87	3	18 52 53.48	26 17 56.5	47.36
4	17 5 49.69	27 29 12.1	17.41	4	18 55 5.70	26 13 12.3	48.59
5	17 8 8.94	27 30 56.6	15.95	5	18 57 17.67	26 8 20.7	49.82
6	17 10 28.16	27 32 32.4	14.49	6	18 59 29.38	26 3 21.7	51.04
7	17 12 47.34	27 33 59.4	13.04	7	19 1 40.85	25 58 15.4	52.26
8	17 15 6.48	27 35 17.6	11.58	8	19 3 52.07	25 53 1.8	53.46
9	17 17 25.57	27 36 27.1	10.12	9	19 6 3.02	25 47 41.0	54.66
10	17 19 44.61	27 37 27.9	8.67	10	19 8 13.72	25 42 13.0	55.85
11	17 22 3.58	27 38 19.9	7.22	11	19 10 24.16	25 36 37.9	57.03
12	17 24 22.49	27 39 3.3	5.77	12	19 12 34.33	25 30 55.7	58.20
13	17 26 41.33	27 39 38.0	4.32	13	19 14 44.24	25 25 6.4	59.37
14	17 29 0.09	27 40 3.9	2.88	14	19 16 53.88	25 19 10.2	60.52
15	17 31 18.78	27 40 21.2	1.44	15	19 19 3.25	25 13 7.0	61.67
16	17 33 37.37	27 40 29.9	0.00	16	19 21 12.36	25 6 57.0	62.81
17	17 35 55.87	27 40 29.9	1.43	17	19 23 21.19	25 0 40.1	63.94
18	17 38 14.27	27 40 21.3	2.86	18	19 25 29.75	24 54 16.4	65.07
19	17 40 32.56	27 40 4.1	4.29	19	19 27 38.04	24 47 45.9	66.18
20	17 42 50.75	27 39 38.3	5.72	20	19 29 46.05	24 41 8.8	67.29
21	17 45 8.82	27 39 3.9	7.14	21	19 31 53.79	24 34 25.0	68.39
22	17 47 26.76	27 38 21.0	8.56	22	19 34 1.25	24 27 34.7	69.48
23	17 49 44.59	27 37 29.6	9.98	23	19 36 8.44	24 20 37.8	70.56
24	17 52 2.28	S. 27 36 29.7		24	19 38 15.34	S. 24 13 34.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 21.				MONDAY 23.			
0	19 38 15.34	S. 24 13 34.4	71.63	0	21 14 30.56	S. 16 44 23.2	113.23
1	19 40 21.97	24 6 24.6	72.69	1	21 16 24.92	16 33 3.8	113.90
2	19 42 28.32	23 59 8.4	73.75	2	21 18 19.09	16 21 40.4	114.56
3	19 44 34.39	23 51 45.9	74.80	3	21 20 13.05	16 10 13.0	115.22
4	19 46 40.18	23 44 17.1	75.83	4	21 22 6.82	15 58 41.6	115.87
5	19 48 45.69	23 36 42.0	76.86	5	21 24 0.39	15 47 6.4	116.51
6	19 50 50.93	23 29 0.8	77.88	6	21 25 53.78	15 35 27.3	117.14
7	19 52 55.88	23 21 13.5	78.90	7	21 27 46.98	15 23 44.4	117.77
8	19 55 0.55	23 13 20.1	79.90	8	21 29 39.99	15 11 57.7	118.39
9	19 57 4.94	23 5 20.6	80.90	9	21 31 32.82	15 0 7.3	119.00
10	19 59 9.06	22 57 15.2	81.88	10	21 33 25.48	14 48 13.3	119.61
11	20 1 12.90	22 49 3.9	82.86	11	21 35 17.96	14 36 15.6	120.21
12	20 3 16.45	22 40 46.7	83.83	12	21 37 10.27	14 24 14.3	120.80
13	20 5 19.73	22 32 23.7	84.79	13	21 39 2.42	14 12 9.5	121.38
14	20 7 22.74	22 23 54.9	85.75	14	21 40 54.40	14 0 1.2	121.96
15	20 9 25.47	22 15 20.4	86.69	15	21 42 46.23	13 47 49.4	122.53
16	20 11 27.92	22 6 40.2	87.63	16	21 44 37.90	13 35 34.2	123.09
17	20 13 30.10	21 57 54.4	88.55	17	21 46 29.42	13 23 15.6	123.65
18	20 15 32.01	21 49 3.1	89.47	18	21 48 20.79	13 10 53.7	124.20
19	20 17 33.64	21 40 6.2	90.38	19	21 50 12.02	12 58 28.4	124.74
20	20 19 35.01	21 31 3.9	91.28	20	21 52 3.10	12 46 0.0	125.28
21	20 21 36.10	21 21 56.2	92.17	21	21 53 54.06	12 33 28.3	125.81
22	20 23 36.93	21 12 43.1	93.06	22	21 55 44.87	12 20 53.4	126.33
23	20 25 37.49	S. 21 3 24.7	93.94	23	21 57 35.56	S. 12 8 15.4	126.84
SUNDAY 22.				TUESDAY 24.			
0	20 27 37.78	S. 20 54 1.1	94.80	0	21 59 26.13	S. 11 55 34.3	127.35
1	20 29 37.81	20 44 32.3	95.66	1	22 1 16.57	11 42 50.2	127.85
2	20 31 37.58	20 34 58.3	96.51	2	22 3 6.90	11 30 3.0	128.35
3	20 33 37.09	20 25 19.2	97.36	3	22 4 57.11	11 17 12.9	128.84
4	20 35 36.34	20 15 35.0	98.19	4	22 6 47.22	11 4 19.8	129.33
5	20 37 35.34	20 5 45.8	99.02	5	22 8 37.22	10 51 23.8	129.80
6	20 39 34.08	19 55 51.7	99.84	6	22 10 27.12	10 38 25.0	130.26
7	20 41 32.57	19 45 52.6	100.65	7	22 12 16.92	10 25 23.4	130.73
8	20 43 30.81	19 35 48.7	101.45	8	22 14 6.63	10 12 19.0	131.18
9	20 45 28.80	19 25 40.0	102.24	9	22 15 56.25	9 59 11.9	131.63
10	20 47 26.54	19 15 26.5	103.03	10	22 17 45.78	9 46 2.1	132.07
11	20 49 24.04	19 5 8.3	103.81	11	22 19 35.24	9 32 49.7	132.51
12	20 51 21.30	18 54 45.4	104.58	12	22 21 24.61	9 19 34.6	132.93
13	20 53 18.32	18 44 17.9	105.34	13	22 23 13.91	9 6 17.0	133.36
14	20 55 15.11	18 33 45.8	106.10	14	22 25 3.15	8 52 56.8	133.77
15	20 57 11.67	18 23 9.2	106.85	15	22 26 52.33	8 39 34.1	134.18
16	20 59 7.99	18 12 28.0	107.59	16	22 28 41.44	8 26 9.0	134.58
17	21 1 4.08	18 1 42.5	108.32	17	22 30 30.50	8 12 41.5	134.98
18	21 2 59.95	17 50 52.5	109.04	18	22 32 19.51	7 59 11.6	135.37
19	21 4 55.59	17 39 58.2	109.76	19	22 34 8.48	7 45 39.4	135.75
20	21 6 51.02	17 28 59.6	110.47	20	22 35 57.40	7 32 4.9	136.12
21	21 8 46.22	17 17 56.8	111.17	21	22 37 46.28	7 18 28.1	136.49
22	21 10 41.22	17 6 49.7	111.86	22	22 39 35.13	7 4 49.1	136.85
23	21 12 35.99	16 55 38.5	112.55	23	22 41 23.95	6 51 8.0	137.21
24	21 14 30.56	S. 16 44 23.2		24	22 43 12.75	S. 6 37 24.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 25.				FRIDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	22 43 12.75	S. 6 37 24.7	137.56	0	0 11 18.81	N. 4 49 10.2	145.71
1	22 45 1.53	6 23 39.3	137.90	1	0 13 12.27	5 3 44.5	145.68
2	22 46 50.29	6 9 51.9	138.23	2	0 15 5.95	5 18 18.6	145.63
3	22 48 39.04	5 56 2.5	138.56	3	0 16 59.86	5 32 52.4	145.58
4	22 50 27.79	5 42 11.1	138.88	4	0 18 54.00	5 47 25.9	145.51
5	22 52 16.53	5 28 17.8	139.20	5	0 20 48.37	6 1 59.0	145.44
6	22 54 5.28	5 14 22.6	139.51	6	0 22 42.99	6 16 31.6	145.35
7	22 55 54.04	5 0 25.5	139.81	7	0 24 37.86	6 31 3.8	145.26
8	22 57 42.80	4 46 26.6	140.10	8	0 26 32.98	6 45 35.4	145.15
9	22 59 31.59	4 32 26.0	140.39	9	0 28 28.35	7 0 6.3	145.04
10	23 1 20.39	4 18 23.6	140.67	10	0 30 23.99	7 14 36.5	144.91
11	23 3 9.23	4 4 19.5	140.95	11	0 32 19.90	7 29 6.0	144.77
12	23 4 58.09	3 50 13.8	141.22	12	0 34 16.08	7 43 34.7	144.62
13	23 6 46.99	3 36 6.5	141.48	13	0 36 12.54	7 58 2.4	144.46
14	23 8 35.93	3 21 57.6	141.73	14	0 38 9.28	8 12 29.2	144.29
15	23 10 24.91	3 7 47.2	141.97	15	0 40 6.31	8 26 55.0	144.11
16	23 12 13.95	2 53 35.3	142.21	16	0 42 3.64	8 41 19.7	143.91
17	23 14 3.04	2 39 22.0	142.45	17	0 44 1.27	8 55 43.2	143.70
18	23 15 52.19	2 25 7.3	142.67	18	0 45 59.20	9 10 5.4	143.49
19	23 17 41.40	2 10 51.3	142.89	19	0 47 57.44	9 24 26.4	143.26
20	23 19 30.68	1 56 33.9	143.10	20	0 49 56.00	9 38 45.9	143.01
21	23 21 20.04	1 42 15.3	143.30	21	0 51 54.88	9 53 4.0	142.76
22	23 23 9.48	1 27 55.5	143.49	22	0 53 54.08	10 7 20.6	142.49
23	23 24 59.00	S. 1 13 34.5	143.68	23	0 55 53.62	N. 10 21 35.6	142.21
THURSDAY 26.				SATURDAY 28.			
0	23 26 48.61	S. 0 59 12.4	143.86	0	0 57 53.49	N. 10 35 48.9	141.92
1	23 28 38.31	0 44 49.2	144.03	1	0 59 53.70	10 50 0.5	141.62
2	23 30 28.11	0 30 25.0	144.19	2	1 1 54.26	11 4 10.2	141.30
3	23 32 18.02	0 15 59.8	144.35	3	1 3 55.17	11 18 18.0	140.97
4	23 34 8.03	S. 0 1 33.7	144.50	4	1 5 56.43	11 32 23.8	140.62
5	23 35 58.15	N. 0 12 53.3	144.64	5	1 7 58.06	11 46 27.6	140.26
6	23 37 48.40	0 27 21.2	144.77	6	1 10 0.06	12 0 29.2	139.89
7	23 39 38.77	0 41 49.8	144.90	7	1 12 2.42	12 14 28.6	139.50
8	23 41 29.26	0 56 19.2	145.01	8	1 14 5.16	12 28 25.7	139.10
9	23 43 19.89	1 10 49.3	145.12	9	1 16 8.28	12 42 20.3	138.69
10	23 45 10.66	1 25 20.1	145.22	10	1 18 11.80	12 56 12.5	138.26
11	23 47 1.57	1 39 51.4	145.31	11	1 20 15.70	13 10 2.1	137.82
12	23 48 52.63	1 54 23.3	145.39	12	1 22 19.99	13 23 49.0	137.36
13	23 50 43.84	2 8 55.7	145.47	13	1 24 24.69	13 37 33.2	136.88
14	23 52 35.22	2 23 28.5	145.54	14	1 26 29.79	13 51 14.5	136.39
15	23 54 26.75	2 38 1.8	145.59	15	1 28 35.30	14 4 52.9	135.89
16	23 56 18.46	2 52 35.4	145.64	16	1 30 41.23	14 18 28.3	135.37
17	23 58 10.34	3 7 9.3	145.68	17	1 32 47.57	14 32 0.5	134.84
18	0 0 2.40	3 21 43.4	145.71	18	1 34 54.34	14 45 29.6	134.29
19	0 1 54.64	3 36 17.7	145.74	19	1 37 1.54	14 58 55.4	133.72
20	0 3 47.07	3 50 52.2	145.75	20	1 39 9.17	15 12 17.7	133.14
21	0 5 39.70	4 5 26.7	145.75	21	1 41 17.24	15 25 36.6	132.54
22	0 7 32.53	4 20 1.3	145.75	22	1 43 25.75	15 38 51.9	131.93
23	0 9 25.56	4 34 35.8	145.73	23	1 45 34.70	15 52 3.5	131.30
24	0 11 18.81	N. 4 49 10.2		24	1 47 44.11	N. 16 5 11.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
SUNDAY 29.				TUESDAY 31.			
0	1 47 44.11	N.16 5 11.3	130.65	0	3 40 54.08	N.24 45 46.2	77.76
1	1 49 53.96	16 18 15.2	129.99	1	3 43 27.81	24 53 32.8	76.18
2	1 52 4.27	16 31 15.2	129.31	2	3 46 2.01	25 1 9.9	74.58
3	1 54 15.04	16 44 11.1	128.61	3	3 48 36.67	25 8 37.4	72.97
4	1 56 26.28	16 57 2.8	127.90	4	3 51 11.78	25 15 55.2	71.34
5	1 58 37.99	17 9 50.2	127.16	5	3 53 47.34	25 23 3.3	69.69
6	2 0 50.16	17 22 33.2	126.41	6	3 56 23.35	25 30 1.4	68.02
7	2 3 2.81	17 35 11.7	125.64	7	3 58 59.79	25 36 49.6	66.33
8	2 5 15.94	17 47 45.6	124.86	8	4 1 36.66	25 43 27.6	64.63
9	2 7 29.55	18 0 14.8	124.06	9	4 4 13.96	25 49 55.5	62.91
10	2 9 43.65	18 12 39.2	123.23	10	4 6 51.68	25 56 13.0	61.18
11	2 11 58.23	18 24 58.6	122.39	11	4 9 29.80	26 2 20.1	59.43
12	2 14 13.31	18 37 13.0	121.54	12	4 12 8.32	26 8 16.7	57.66
13	2 16 28.88	18 49 22.2	120.66	13	4 14 47.25	26 14 2.7	55.87
14	2 18 44.94	19 1 26.2	119.76	14	4 17 26.56	26 19 38.0	54.07
15	2 21 1.51	19 13 24.9	118.85	15	4 20 6.25	26 25 2.4	52.26
16	2 23 18.57	19 25 18.0	117.92	16	4 22 46.31	26 30 16.0	50.43
17	2 25 36.14	19 37 5.5	116.96	17	4 25 26.73	26 35 18.6	48.59
18	2 27 54.21	19 48 47.3	115.99	18	4 28 7.50	26 40 10.2	46.73
19	2 30 12.79	20 0 23.3	115.00	19	4 30 48.61	26 44 50.6	44.86
20	2 32 31.88	20 11 53.4	113.99	20	4 33 30.05	26 49 19.7	42.97
21	2 34 51.48	20 23 17.4	112.97	21	4 36 11.82	26 53 37.6	41.08
22	2 37 11.59	20 34 35.2	111.92	22	4 38 53.89	26 57 44.1	39.17
23	2 39 32.21	N.20 45 46.8	110.85	23	4 41 36.27	N.27 1 39.1	37.24
MONDAY 30.				WEDNESDAY, JUNE 1.			
0	2 41 53.35	N.20 56 51.9	109.77	0	4 44 18.94	N.27 5 22.6	
1	2 44 15.00	21 7 50.5	108.66				
2	2 46 37.17	21 18 42.5	107.54				
3	2 48 59.85	21 29 27.8	106.39				
4	2 51 23.05	21 40 6.1	105.22				
5	2 53 46.77	21 50 37.5	104.04				
6	2 56 11.00	22 1 1.8	102.83				
7	2 58 35.75	22 11 18.8	101.61				
8	3 1 1.02	22 21 28.4	100.36				
9	3 3 26.80	22 31 30.6	99.10				
10	3 5 53.09	22 41 25.2	97.81				
11	3 8 19.90	22 51 12.1	96.51				
12	3 10 47.21	23 0 51.2	95.18				
13	3 13 15.04	23 10 22.3	93.84				
14	3 15 43.37	23 19 45.4	92.47				
15	3 18 12.21	23 29 0.3	91.09				
16	3 20 41.56	23 38 6.8	89.68				
17	3 23 11.40	23 47 4.9	88.26				
18	3 25 41.75	23 55 54.5	86.82				
19	3 28 12.59	24 4 35.5	85.35				
20	3 30 43.92	24 13 7.6	83.87				
21	3 33 15.74	24 21 30.9	82.37				
22	3 35 48.04	24 29 45.1	80.85				
23	3 38 20.82	24 37 50.3	79.31				
24	3 40 54.08	N.24 45 46.2					

PHASES OF THE MOON.

	d	h	m
● New Moon	-	-	2 10 4.4
☾ First Quarter	-	-	9 4 59.1
○ Full Moon	-	-	16 9 6.8
☾ Last Quarter	-	-	24 10 49.3
● New Moon	-	-	31 19 10.0

	d	h
☾ Perigee	-	6 13
☾ Apogee	-	22 2

MEAN TIME.												
LUNAR DISTANCES.												
Day of the Month.	Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.		
4	SUN	W.	21 15 8	2707	22 51 39	2685	24 28 39	2668	26 6 2	2652		
	Pollux	E.	46 53 26	2302	45 7 29	2298	43 21 26	2293	41 35 17	2289		
	Saturn	E.	61 57 37	2300	60 11 37	2293	58 25 27	2288	56 39 10	2282		
	Regulus	E.	83 42 20	2284	81 55 57	2278	80 9 25	2272	78 22 45	2268		
5	SUN	W.	34 17 24	2601	35 56 18	2594	37 35 22	2588	39 14 34	2582		
	Pollux	E.	32 43 28	2281	30 57 1	2282	29 10 36	2284	27 24 13	2288		
	Saturn	E.	47 45 59	2262	45 59 4	2260	44 12 6	2257	42 25 3	2255		
	Regulus	E.	69 27 41	2247	67 40 23	2244	65 53 1	2241	64 5 35	2239		
6	SUN	W.	47 32 2	2567	49 11 43	2565	50 51 26	2564	52 31 10	2564		
	Mars	W.	25 11 25	2510	26 52 24	2503	28 33 33	2497	30 14 51	2493		
	Jupiter	W.	11 7 30	2666	12 44 55	2577	14 24 22	2517	16 5 11	2475		
	Saturn	E.	33 29 18	2251	31 42 6	2250	29 54 53	2251	28 7 42	2252		
	Regulus	E.	55 7 49	2234	53 20 12	2233	51 32 34	2234	49 44 58	2234		
	Spica	E.	109 10 8	2237	107 22 35	2237	105 35 3	2237	103 47 30	2237		
7	SUN	W.	60 49 52	2567	62 29 33	2569	64 9 11	2570	65 48 47	2573		
	Mars	W.	38 42 24	2484	40 24 0	2484	42 5 35	2484	43 47 10	2485		
	Jupiter	W.	24 39 46	2384	26 23 44	2376	28 7 53	2371	29 52 9	2368		
	Regulus	E.	40 47 15	2242	38 59 50	2244	37 12 28	2247	35 25 10	2249		
	Spica	E.	94 50 7	2244	93 2 45	2246	91 15 26	2249	89 28 11	2251		
8	SUN	W.	74 5 50	2588	75 45 1	2593	77 24 6	2596	79 3 7	2601		
	Mars	W.	52 14 30	2497	53 55 47	2500	55 37 0	2503	57 18 9	2507		
	Jupiter	W.	38 34 17	2364	40 18 43	2366	42 3 7	2367	43 47 29	2370		
	Pollux	W.	11 7 6	2503	12 48 15	2450	14 30 39	2415	16 13 52	2391		
	Regulus	E.	26 29 44	2266	24 42 55	2270	22 56 12	2274	21 9 34	2279		
	Spica	E.	80 33 1	2268	78 46 14	2271	76 59 32	2276	75 12 57	2279		
9	SUN	W.	87 16 36	2624	88 54 59	2629	90 33 14	2635	92 11 22	2640		
	Mars	W.	65 42 30	2528	67 23 4	2533	69 3 31	2538	70 43 52	2543		
	Jupiter	W.	52 28 18	2386	54 12 13	2389	55 56 3	2394	57 39 46	2398		
	Pollux	W.	24 55 34	2351	26 40 20	2350	28 25 7	2350	30 9 54	2351		
	Spica	E.	66 21 36	2302	64 35 40	2308	62 49 52	2313	61 4 11	2318		
	Antares	E.	112 13 31	2300	110 27 31	2304	108 41 37	2309	106 55 50	2314		
10	SUN	W.	100 20 5	2670	101 57 25	2676	103 34 37	2682	105 11 41	2689		
	Mars	W.	79 3 47	2569	80 43 24	2576	82 22 52	2582	84 2 12	2587		
	Jupiter	W.	66 16 42	2423	67 59 44	2429	69 42 38	2434	71 25 25	2440		
	Pollux	W.	38 53 10	2364	40 37 36	2369	42 21 55	2373	44 6 9	2377		
	Saturn	W.	23 14 6	2362	24 58 36	2367	26 42 59	2373	28 27 13	2378		
	Spica	E.	52 17 45	2346	50 32 52	2352	48 48 8	2358	47 3 33	2364		
	Antares	E.	98 8 53	2341	96 23 53	2347	94 39 2	2352	92 54 18	2359		
11	SUN	W.	113 14 44	2723	114 50 53	2731	116 26 52	2738	118 2 41	2745		
	Mars	W.	92 16 49	2619	93 55 18	2626	95 33 38	2632	97 11 50	2639		
	Jupiter	W.	79 57 15	2470	81 39 11	2475	83 20 59	2482	85 2 38	2488		
	Pollux	W.	52 45 33	2403	54 29 3	2409	56 12 25	2415	57 55 38	2421		
	Saturn	W.	37 6 20	2408	38 49 43	2414	40 32 57	2421	42 16 2	2427		
	Regulus	W.	15 44 23	2392	17 28 9	2397	19 11 48	2404	20 55 17	2409		
	Spica	E.	38 22 52	2397	36 39 13	2403	34 55 43	2411	33 12 24	2418		
	Antares	E.	84 12 50	2389	82 28 59	2395	80 45 17	2401	79 1 43	2407		

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
4	Sun W.	27 43 47	2639	29 21 49	2627	31 0 7	2617	32 38 39	2608
	Pollux E.	39 49 2	2287	38 2 43	2284	36 16 20	2282	34 29 55	2281
	Saturn E.	54 52 45	2277	53 6 12	2274	51 19 34	2269	49 32 49	2266
	Regulus E.	76 35 58	2262	74 49 3	2258	73 2 1	2254	71 14 54	2250
5	Sun W.	40 53 54	2578	42 33 19	2574	44 12 49	2571	45 52 24	2569
	Pollux E.	25 37 56	2293	23 51 46	2300	22 5 47	2309	20 20 1	2323
	Saturn E.	40 37 58	2254	38 50 50	2253	37 3 41	2252	35 16 30	2251
	Regulus E.	62 18 6	2237	60 30 34	2236	58 43 1	2235	56 55 25	2235
6	Sun W.	54 10 55	2563	55 50 41	2564	57 30 26	2564	59 10 10	2566
	Mars W.	31 56 14	2489	33 37 43	2487	35 19 14	2485	37 0 49	2484
	Jupiter W.	17 47 0	2445	19 29 31	2422	21 12 34	2405	22 56 1	2393
	Saturn E.	26 20 32	2254	24 33 24	2255	22 46 18	2256	20 59 14	2259
	Regulus E.	47 57 22	2235	46 9 47	2236	44 22 14	2238	42 34 44	2239
	Spica E.	101 59 58	2238	100 12 27	2239	98 24 58	2241	96 37 31	2243
	Spica E.	101 59 58	2238	100 12 27	2239	98 24 58	2241	96 37 31	2243
7	Sun W.	67 28 19	2575	69 7 48	2578	70 47 13	2581	72 26 34	2585
	Mars W.	45 28 44	2487	47 10 15	2490	48 51 43	2492	50 33 8	2494
	Jupiter W.	31 36 30	2365	33 20 55	2364	35 5 22	2364	36 49 49	2363
	Regulus E.	33 37 55	2252	31 50 45	2255	30 3 40	2258	28 16 39	2262
	Spica E.	87 41 0	2254	85 53 53	2257	84 6 51	2260	82 19 53	2264
8	Sun W.	80 42 1	2605	82 20 50	2610	83 59 32	2614	85 38 8	2620
	Mars W.	58 59 12	2511	60 40 10	2515	62 21 3	2520	64 1 49	2523
	Jupiter W.	45 31 47	2372	47 16 2	2375	49 0 12	2378	50 44 18	2382
	Pollux W.	17 57 40	2375	19 41 50	2365	21 26 15	2358	23 10 51	2353
	Regulus E.	19 23 4	2283	17 36 40	2289	15 50 24	2294	14 4 15	2300
	Spica E.	73 26 27	2284	71 40 4	2289	69 53 48	2293	68 7 38	2298
9	Sun W.	93 49 22	2646	95 27 14	2652	97 4 59	2657	98 42 36	2663
	Mars W.	72 24 6	2548	74 4 12	2553	75 44 12	2559	77 24 3	2564
	Jupiter W.	59 23 23	2403	61 6 53	2408	62 50 16	2412	64 33 33	2418
	Pollux W.	31 54 40	2353	33 39 23	2355	35 24 3	2357	37 8 39	2361
	Spica E.	59 18 38	2323	57 33 12	2329	55 47 55	2335	54 2 46	2340
	Antares E.	105 10 11	2320	103 24 40	2325	101 39 17	2330	99 54 1	2335
10	Sun W.	106 48 35	2695	108 25 21	2702	110 1 58	2710	111 38 25	2716
	Mars W.	85 41 25	2594	87 20 28	2599	88 59 24	2606	90 38 11	2612
	Jupiter W.	73 8 3	2445	74 50 34	2451	76 32 56	2457	78 15 10	2463
	Pollux W.	45 50 16	2382	47 34 16	2387	49 18 9	2392	51 1 55	2398
	Saturn W.	30 11 19	2384	31 55 17	2389	33 39 7	2396	35 22 48	2402
	Spica E.	45 19 6	2371	43 34 49	2377	41 50 41	2383	40 6 42	2389
11	Antares E.	91 9 44	2364	89 25 17	2370	87 40 59	2376	85 56 50	2382
	Sun W.	119 38 21	2753	121 13 50	2761	122 49 9	2769	124 24 17	2777
	Mars W.	98 49 52	2646	100 27 44	2652	102 5 28	2660	103 43 2	2667
	Jupiter W.	86 44 8	2495	88 25 28	2502	90 6 39	2508	91 47 41	2515
	Pollux W.	59 38 43	2427	61 21 40	2433	63 4 28	2439	64 47 7	2446
	Saturn W.	43 58 58	2433	45 41 45	2440	47 24 23	2448	49 6 50	2454
12	Regulus W.	22 38 38	2415	24 21 51	2422	26 4 54	2429	27 47 48	2436
	Spica E.	31 29 15	2426	29 46 17	2434	28 3 30	2442	26 20 55	2450
	Antares E.	77 18 19	2414	75 35 5	2420	73 51 59	2427	72 9 3	2434

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
12	Sun W.	125 59 15	2786	127 34 1	2794	129 8 37	2803	130 43 1	2812
	Mars W.	105 20 26	2675	106 57 40	2682	108 34 44	2689	110 11 38	2697
	Jupiter W.	93 28 33	2522	95 9 15	2529	96 49 48	2537	98 30 10	2544
	Pollux W.	66 29 37	2453	68 11 57	2459	69 54 8	2465	71 36 10	2473
	Saturn W.	50 49 8	2460	52 31 17	2468	54 13 15	2475	55 55 4	2482
	Regulus W.	29 30 32	2442	31 13 7	2449	32 55 32	2455	34 37 48	2462
	Spica E.	24 38 32	2460	22 56 22	2470	21 14 26	2480	19 32 44	2492
	Antares E.	70 26 17	2441	68 43 41	2448	67 1 14	2455	65 18 57	2462
13	Jupiter W.	106 49 26	2583	108 28 45	2591	110 7 53	2599	111 46 50	2607
	Pollux W.	80 3 49	2509	81 44 50	2517	83 25 40	2524	85 6 20	2532
	Saturn W.	64 21 34	2520	66 2 20	2527	67 42 56	2535	69 23 21	2543
	Regulus W.	43 6 35	2499	44 47 49	2507	46 28 53	2514	48 9 46	2522
	Antares E.	56 50 6	2499	55 8 51	2507	53 27 47	2514	51 46 53	2522
	α Aquilæ E.	108 16 28	3267	106 51 38	3261	105 26 41	3257	104 1 39	3254
14	Pollux W.	93 26 53	2573	95 6 25	2581	96 45 46	2590	98 24 55	2599
	Saturn W.	77 42 37	2584	79 21 54	2593	81 0 59	2601	82 39 52	2610
	Regulus W.	56 31 23	2563	58 11 9	2572	59 50 42	2580	61 30 4	2589
	Antares E.	43 25 14	2563	41 45 28	2572	40 5 54	2580	38 26 32	2588
	α Aquilæ E.	96 56 6	3258	95 31 5	3263	94 6 10	3268	92 41 21	3275
15	Pollux W.	106 37 35	2644	108 15 30	2654	109 53 12	2664	111 30 40	2673
	Saturn W.	90 51 16	2655	92 28 56	2665	94 6 23	2675	95 43 37	2684
	Regulus W.	69 43 53	2634	71 22 2	2643	72 59 59	2653	74 37 43	2663
	Spica W.	15 48 54	2671	17 26 13	2674	19 3 28	2679	20 40 36	2684
	Antares E.	30 12 42	2634	28 34 33	2643	26 56 36	2653	25 18 53	2662
	α Aquilæ E.	85 39 40	3325	84 15 57	3338	82 52 29	3352	81 29 17	3367
	Fomalhaut E.	110 43 27	2997	109 13 10	2998	107 42 55	3001	106 12 44	3005
16	Saturn W.	103 46 35	2732	105 22 32	2743	106 58 15	2753	108 33 45	2763
	Regulus W.	82 43 9	2710	84 19 35	2720	85 55 48	2730	87 31 48	2740
	Spica W.	28 44 4	2722	30 20 14	2731	31 56 12	2740	33 31 59	2750
	α Aquilæ E.	74 38 8	3461	73 17 1	3483	71 56 18	3508	70 36 3	3533
	Fomalhaut E.	98 43 17	3034	97 13 47	3042	95 44 26	3050	94 15 15	3059
17	Regulus W.	95 28 31	2790	97 3 12	2800	98 37 40	2810	100 11 55	2819
	Spica W.	41 27 48	2796	43 2 21	2806	44 36 41	2815	46 10 49	2825
	α Aquilæ E.	64 2 16	3683	62 45 11	3720	61 28 45	3758	60 12 59	3798
	Fomalhaut E.	86 52 13	3109	85 24 15	3121	83 56 31	3133	82 29 1	3145
	α Pegasi E.	108 47 9	3007	107 17 5	3013	105 47 9	3020	104 17 21	3027
18	Regulus W.	107 59 59	2869	109 32 57	2878	111 5 44	2888	112 38 18	2898
	Spica W.	53 58 20	2873	55 31 13	2883	57 3 54	2892	58 36 23	2901
	α Aquilæ E.	54 5 23	4041	52 54 24	4101	51 44 23	4164	50 35 23	4231
	Fomalhaut E.	75 15 25	3214	73 49 32	3229	72 3 57	3244	70 58 40	3261
	α Pegasi E.	96 50 40	3066	95 21 49	3075	93 53 9	3083	92 24 39	3093
19	Spica W.	66 15 56	2946	67 47 17	2954	69 18 28	2962	70 49 28	2970
	Antares W.	20 22 6	2942	21 53 32	2951	23 24 46	2958	24 55 51	2967
	Fomalhaut E.	63 57 14	3351	62 34 1	3370	61 11 10	3391	59 48 43	3413
	α Pegasi E.	85 4 57	3139	83 37 35	3148	82 10 24	3158	80 43 25	3168
	Venus E.	115 25 36	3419	114 3 41	3428	112 41 56	3436	111 20 20	3445

MEAN TIME.

LUNAR DISTANCES.

Star's Name and Position.	Midnight.	P.L. of diff.	XV ^b .	P.L. of diff.	XVIII ^b .	P.L. of diff.	XXI ^b .	P.L. of diff.
12. <i>Scor</i> W. 132 17 13 2821 133 51 13 2831 135 25 1 2841 136 58 36 2851								
<i>Mars</i> W. 111 48 22 2705 113 24 56 2713 115 1 19 2721 116 37 31 2729								
<i>Jupiter</i> W. 100 10 22 2551 101 50 24 2559 103 30 15 2567 105 9 56 2575								
<i>Pollux</i> W. 73 18 1 2480 74 59 43 2487 76 41 15 2494 78 22 37 2501								
<i>Saturn</i> W. 57 36 42 2489 59 18 11 2497 60 59 29 2504 62 40 37 2512								
<i>Regulus</i> W. 36 19 54 2470 38 1 50 2477 39 43 35 2485 41 25 10 2492								
<i>Spica</i> E. 17 51 20 2505 16 10 13 2521 14 29 29 2539 12 49 10 2563								
<i>Antares</i> E. 63 36 51 2469 61 54 54 2477 60 13 8 2484 58 31 32 2491								
13. <i>Jupiter</i> W. 113 25 35 2615 115 4 9 2624 116 42 31 2633 118 20 41 2642								
<i>Pollux</i> W. 86 46 49 2540 88 27 7 2548 90 7 14 2556 91 47 9 2564								
<i>Saturn</i> W. 71 3 35 2551 72 43 37 2559 74 23 29 2567 76 3 9 2576								
<i>Regulus</i> W. 49 50 28 2531 51 30 58 2538 53 11 18 2547 54 51 26 2555								
<i>Antares</i> E. 50 6 11 2530 48 25 40 2538 46 45 20 2546 45 5 11 2555								
<i>a Aquile</i> E. 102 36 33 3252 101 11 26 3252 99 46 18 3252 98 21 11 3254								
14. <i>Pollux</i> W. 100 3 51 2607 101 42 36 2617 103 21 8 2626 104 59 28 2635								
<i>Saturn</i> W. 84 18 33 2618 85 57 3 2628 87 35 20 2637 89 13 24 2646								
<i>Regulus</i> W. 63 9 14 2597 64 48 13 2607 66 26 59 2616 68 5 32 2625								
<i>Antares</i> E. 36 47 21 2598 35 8 23 2607 33 29 37 2615 31 51 3 2625								
<i>a Aquile</i> E. 91 16 40 3283 89 52 8 3292 88 27 47 3301 87 3 37 3312								
15. <i>Pollux</i> W. 113 7 56 2683 114 44 59 2693 116 21 48 2703 117 58 24 2713								
<i>Saturn</i> W. 97 20 39 2693 98 57 28 2704 100 34 3 2713 102 10 26 2723								
<i>Regulus</i> W. 76 15 13 2671 77 52 32 2681 79 29 37 2691 81 6 29 2700								
<i>Spica</i> W. 22 17 37 2691 23 54 29 2698 25 31 11 2706 27 7 43 2714								
<i>Antares</i> E. 23 41 22 2672 22 4 4 2681 20 26 59 2691 18 50 7 2701								
<i>a Aquile</i> E. 80 6 23 3384 78 43 48 3401 77 21 33 3420 75 59 39 3440								
<i>Fomalhaut</i> E. 104 42 38 3010 103 12 37 3015 101 42 43 3021 100 12 56 3027								
16. <i>Saturn</i> W. 110 9 2 2773 111 44 5 2783 113 18 55 2792 114 53 33 2803								
<i>Regulus</i> W. 89 7 35 2750 90 43 9 2760 92 18 30 2770 93 53 37 2780								
<i>Spica</i> W. 35 7 33 2759 36 42 55 2768 38 18 5 2777 39 53 3 2787								
<i>a Aquile</i> E. 69 16 15 3560 67 56 57 3588 66 38 10 3619 65 19 56 3650								
<i>Fomalhaut</i> E. 92 46 15 3068 91 17 26 3078 89 48 49 3088 88 20 25 3098								
17. <i>Regulus</i> W. 101 45 58 2830 103 19 47 2839 104 53 24 2849 106 26 48 2859								
<i>Spica</i> W. 47 44 44 2835 49 18 26 2845 50 51 56 2854 52 25 14 2863								
<i>a Aquile</i> E. 58 57 55 3841 57 43 35 3886 56 30 1 3934 55 17 16 3986								
<i>Fomalhaut</i> E. 81 1 46 3158 79 34 46 3172 78 8 3 3184 76 41 35 3199								
<i>a Pegasi</i> E. 102 47 42 3035 101 18 12 3043 99 48 52 3050 98 19 41 3058								
18. <i>Regulus</i> W. 114 10 40 2906 115 42 51 2916 117 14 50 2925 118 46 37 2934								
<i>Spica</i> W. 60 8 41 2911 61 40 46 2919 63 12 41 2928 64 44 24 2937								
<i>a Aquile</i> E. 49 27 26 4305 48 20 38 4383 47 15 1 4467 46 10 40 4559								
<i>Fomalhaut</i> E. 69 33 43 3277 68 9 5 3294 66 44 47 3312 65 20 50 3331								
<i>a Pegasi</i> E. 90 56 21 3101 89 28 13 3110 88 0 16 3120 86 32 31 3129								
19. <i>Spica</i> W. 72 20 19 2978 73 50 59 2985 75 21 30 2993 76 51 52 2999								
<i>Antares</i> W. 26 26 45 2974 27 57 30 2982 29 28 5 2989 30 58 31 2997								
<i>Fomalhaut</i> E. 58 26 41 3435 57 5 4 3459 55 43 54 3484 54 23 12 3510								
<i>a Pegasi</i> E. 79 16 37 3178 77 50 1 3188 76 23 37 3198 74 57 25 3207								
<i>Venus</i> E. 109 58 54 3454 108 37 38 3462 107 16 31 3470 105 55 33 3477								

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
20	Spica W.	78 22 6	3007	79 52 10	3013	81 22 7	3019	82 51 56	3086
	Antares W.	32 28 48	3004	33 58 56	3010	35 28 57	3016	36 58 50	3022
	Fomalhaut E.	53 2 59	3537	51 43 16	3567	50 24 6	3598	49 5 29	3631
	α Pegasi E.	73 31 24	3218	72 5 36	3228	70 40 0	3238	69 14 36	3248
	Venus E.	104 34 43	3485	103 14 2	3491	101 53 28	3498	100 33 2	3505
	SUN E.	138 25 44	3404	137 3 32	3409	135 41 26	3414	134 19 25	3419
21	Spica W.	90 19 17	3050	91 48 28	3054	93 17 34	3058	94 46 35	3061
	Antares W.	44 26 30	3047	45 55 45	3051	47 24 54	3054	48 54 0	3058
	Fomalhaut E.	42 42 11	3837	41 27 47	3889	40 14 16	3947	39 1 44	4009
	α Pegasi E.	62 10 40	3303	60 46 32	3313	59 22 36	3325	57 58 54	3338
	Venus E.	93 52 35	3533	92 32 48	3537	91 13 5	3542	89 53 27	3545
	SUN E.	127 30 41	3440	126 9 10	3444	124 47 43	3447	123 26 20	3449
22	Spica W.	102 10 51	3071	103 39 36	3072	105 8 19	3072	106 37 3	3072
	Antares W.	56 18 35	3068	57 47 24	3069	59 16 12	3069	60 44 59	3069
	α Pegasi E.	51 4 5	3406	49 41 56	3422	48 20 4	3439	46 58 32	3457
	Venus E.	83 16 9	3557	81 56 48	3559	80 37 29	3560	79 18 11	3561
	SUN E.	116 39 59	3458	115 18 48	3457	113 57 36	3458	112 36 25	3457
23	Antares W.	68 9 9	3062	69 38 5	3059	71 7 5	3056	72 36 9	3052
	α Pegasi E.	40 16 30	3575	38 57 28	3606	37 39 0	3641	36 21 10	3680
	Venus E.	72 41 35	3555	71 22 11	3553	70 2 45	3549	68 43 15	3545
	SUN E.	105 50 10	3448	104 28 48	3444	103 7 21	3441	101 45 51	3437
24	Antares W.	80 2 48	3026	81 32 28	3020	83 2 16	3013	84 32 13	3005
	Venus E.	62 4 39	3521	60 44 38	3515	59 24 31	3509	58 4 17	3502
	SUN E.	94 56 56	3408	93 34 48	3401	92 12 32	3393	90 50 8	3385
25	Antares W.	92 4 29	2961	93 35 31	2951	95 6 45	2940	96 38 13	2929
	α Aquilæ W.	47 10 8	4435	48 14 58	4354	49 21 1	4280	50 28 12	4210
	Venus E.	51 20 59	3461	49 59 51	3452	48 38 33	3442	47 17 4	3433
	SUN E.	83 55 34	3337	82 32 5	3326	81 8 23	3314	79 44 28	3303
26	Antares W.	104 19 11	2868	105 52 11	2855	107 25 28	2842	108 59 2	2828
	α Aquilæ W.	56 19 30	3918	57 32 31	3868	58 46 23	3822	60 1 2	3778
	Fomalhaut W.	30 39 26	4224	31 44 26	4277	32 51 40	4146	34 0 57	4030
	Venus E.	40 26 51	3382	39 4 14	3371	37 41 25	3361	36 18 24	3351
	SUN E.	72 41 18	3237	71 15 52	3223	69 50 10	3209	68 24 11	3194
27	α Aquilæ W.	66 25 21	3582	67 44 15	3547	69 3 47	3514	70 23 56	3482
	Fomalhaut W.	40 12 59	3591	41 31 43	3524	42 51 40	3462	44 12 46	3405
	Venus E.	29 20 44	3312	27 56 46	3308	26 32 44	3306	25 8 39	3306
	SUN E.	61 9 43	3115	59 41 52	3099	58 13 41	3082	56 45 10	3065
28	α Aquilæ W.	77 13 11	3340	78 36 36	3314	80 0 31	3290	81 24 54	3266
	Fomalhaut W.	51 13 28	3166	52 40 18	3125	54 7 57	3087	55 36 22	3052
	α Pegasi W.	29 32 49	3516	30 52 55	3418	32 14 51	3329	33 38 29	3250
	SUN E.	49 17 23	2981	47 46 46	2964	46 15 48	2948	44 44 30	2930
29	α Aquilæ W.	88 33 15	3166	90 0 4	3149	91 27 14	3134	92 54 42	3119
	Fomalhaut W.	63 9 5	2892	64 41 34	2864	66 14 39	2837	67 48 19	2811
	α Pegasi W.	40 57 20	2952	42 28 33	2906	44 0 44	2863	45 33 51	2824

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
20	Spica W.	84 21 37	3031	85 51 12	3036	87 20 40	3041	88 50 2	3046
	Antares W.	38 28 35	3028	39 58 13	3033	41 27 45	3038	42 57 10	3043
	Fomalhaut E.	47 47 28	3666	46 30 5	3705	45 13 23	3746	43 57 24	3790
	α Pegasi E.	67 49 24	3259	66 24 24	3270	64 59 37	3280	63 35 2	3291
	Venus E.	99 12 44	3511	97 52 32	3517	96 32 27	3523	95 12 28	3528
	Sun E.	132 57 30	3424	131 35 41	3428	130 13 56	3433	128 52 17	3436
21	Spica W.	96 15 32	3064	97 44 26	3066	99 13 17	3069	100 42 5	3070
	Antares W.	50 23 1	3061	51 51 58	3063	53 20 53	3065	54 49 45	3067
	Fomalhaut E.	37 50 13	4078	36 39 50	4155	35 30 41	4240	34 22 53	4335
	α Pegasi E.	56 35 27	3350	55 12 13	3364	53 49 15	3377	52 26 32	3391
	Venus E.	88 33 53	3548	87 14 22	3552	85 54 55	3554	84 35 31	3556
	Sun E.	122 4 59	3452	120 43 41	3454	119 22 26	3455	118 1 12	3456
22	Spica W.	108 5 46	3072	109 34 29	3071	111 3 14	3069	112 32 1	3068
	Antares W.	62 13 46	3068	63 42 35	3068	65 11 24	3066	66 40 15	3064
	α Pegasi E.	45 37 20	3477	44 16 30	3498	42 56 4	3521	41 36 3	3546
	Venus E.	77 58 54	3560	76 39 36	3559	75 20 17	3558	74 0 57	3556
	Sun E.	111 15 13	3457	109 54 1	3455	108 32 46	3453	107 11 29	3451
23	Antares W.	74 5 17	3048	75 34 30	3043	77 3 49	3038	78 33 15	3032
	α Pegasi E.	35 4 2	3724	33 47 40	3774	32 32 11	3831	31 17 41	3897
	Venus E.	67 23 41	3542	66 4 3	3538	64 44 21	3533	63 24 33	3527
	Sun E.	100 24 16	3431	99 2 35	3427	97 40 49	3421	96 18 56	3415
24	Antares W.	86 2 20	2997	87 32 36	2989	89 3 2	2980	90 33 40	2971
	Venus E.	56 43 55	3494	55 23 24	3487	54 2 45	3479	52 41 57	3470
	Sun E.	89 27 34	3376	88 4 50	3367	86 41 56	3358	85 18 51	3347
25	Antares W.	98 9 55	2918	99 41 51	2906	101 14 2	2894	102 46 29	2882
	α Aquilæ W.	51 36 29	4144	52 45 48	4083	53 56 6	4025	55 7 21	3970
	Venus E.	45 55 25	3423	44 33 34	3412	43 11 31	3402	41 49 17	3392
	Sun E.	78 20 20	3290	76 55 57	3277	75 31 19	3265	74 6 26	3252
26	Antares W.	110 32 54	2813	112 7 5	2798	113 41 35	2783	115 16 25	2769
	α Aquilæ W.	61 16 27	3735	62 32 37	3694	63 49 31	3655	65 7 6	3618
	Fomalhaut W.	35 12 7	3925	36 25 2	3830	37 39 33	3744	38 55 34	3664
	Venus E.	34 55 12	3322	33 31 49	3334	32 8 17	3325	30 44 34	3318
	Sun E.	66 57 55	3178	65 31 20	3163	64 4 27	3147	62 37 14	3132
27	α Aquilæ W.	71 44 41	3452	73 5 59	3422	74 27 51	3393	75 50 15	3366
	Fomalhaut W.	45 34 57	3351	46 58 10	3300	48 22 21	3253	49 47 28	3208
	Venus E.	23 44 34	3309	22 20 33	3318	20 56 42	3332	19 33 7	3353
	Sun E.	55 16 18	3049	53 47 6	3031	52 17 32	3015	50 47 38	2998
28	α Aquilæ W.	82 49 45	3245	84 15 1	3224	85 40 42	3203	87 6 47	3184
	Fomalhaut W.	57 5 32	3016	58 35 25	2983	60 5 59	2951	61 37 13	2921
	α Pegasi W.	35 3 39	3179	36 30 13	3115	37 58 5	3056	39 27 9	3002
	Sun E.	43 12 50	2913	41 40 48	2898	40 8 27	2882	38 35 45	2866
29	α Aquilæ W.	94 22 28	3106	95 50 30	3094	97 18 47	3084	98 47 16	3074
	Fomalhaut W.	69 22 32	2787	70 57 17	2764	72 32 32	2741	74 8 18	2719
	α Pegasi W.	47 7 48	2786	48 42 34	2750	50 18 7	2718	51 54 23	2687
	Sun E.	30 47 28	2798	29 12 57	2787	27 38 12	2778	26 3 15	2771

CONFIGURATIONS OF THE SATELLITES OF JUPITER,

At 8^h 30^m, MEAN TIME.

Day of the Month.	West.	East.
1		○ 1 2 3 4
2		○ 4 3
3		○ 1 3
4	4	○ 2
5	4 3	○ 1 2
6	4 3 2	○
7	4 3 1	○
8	4	○ 1 2
9	4 1 2	○ 3
10	4 2	○ 1 3
11	1 2	○ 2
12	3	○ 1 2 4
13	3 2 1	○ 4
14	1 ○ 3 2	○ 4
15		○ 1 3 2 4
16	1 2	○ 3 4
17	2	○ 1 3 4
18	1 2	○ 2 4
19	3	○ 1 2
20	3 2 1	○
21	4 3 2	○
22	4	○ 3 2
23	4 1	○ 3
24	4 2	○ 3
25	4 1	○ 2
26	4 3	○ 1 2
27	3 4 2 1	○
28	3 2	○ 1
29	1 ●	○ 3 4
30		1 ○ 2 3 4
31	2	○ 1 3 4

This Table represents, at 8^h 30^m after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is *on the disc of Jupiter*, and a black circle (●) that it is either *behind the disc*, or in the *shadow*, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars. At Mean Midnight,				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^d .449625 Days.	From Mean Noon of January 1.	
	Logarithm of						Day of the Year.	Fraction of the Year.*
	A	B	C	D				
1	-1°1506	-1°1280	+9°6951	-0°8845	21 20 57°04	39	120	°3285
2	1°1441	1°1363	9°6977	0°8832	21 17 1°13	40	121	°3313
3	1°1374	1°1443	9°7002	0°8819	21 13 5°22	41	122	°3340
4	-1°1304	-1°1520	+9°7027	-0°8805	21 9 9°31	42	123	°3368
5	1°1232	1°1595	9°7053	0°8792	21 5 13°40	43	124	°3395
6	1°1158	1°1667	9°7079	0°8779	21 1 17°49	44	125	°3422
7	-1°1081	-1°1737	+9°7105	-0°8765	20 57 21°58	45	126	°3450
8	1°1001	1°1805	9°7130	0°8752	20 53 25°67	46	127	°3477
9	1°0919	1°1870	9°7156	0°8738	20 49 29°76	47	128	°3504
10	-1°0834	-1°1933	+9°7182	-0°8725	20 45 33°85	48	129	°3532
11	1°0746	1°1994	9°7209	0°8712	20 41 37°94	49	130	°3559
12	1°0655	1°2053	9°7235	0°8698	20 37 42°03	50	131	°3587
13	-1°0561	-1°2109	+9°7261	-0°8685	20 33 46°12	51	132	°3614
14	1°0464	1°2164	9°7287	0°8672	20 29 50°21	52	133	°3641
15	1°0364	1°2217	9°7314	0°8658	20 25 54°30	53	134	°3669
16	-1°0258	-1°2268	+9°7340	-0°8645	20 21 58°39	54	135	°3696
17	1°0150	1°2317	9°7367	0°8632	20 18 2°48	55	136	°3724
18	1°0038	1°2364	9°7393	0°8619	20 14 6°56	56	137	°3751
19	-0°9921	-1°2410	+9°7420	-0°8607	20 10 10°65	57	138	°3778
20	0°9801	1°2454	9°7446	0°8594	20 6 14°74	58	139	°3806
21	0°9675	1°2496	9°7473	0°8581	20 2 18°83	59	140	°3833
22	-0°9545	-1°2537	+9°7500	-0°8569	19 58 22°92	60	141	°3860
23	0°9409	1°2576	9°7526	0°8557	19 54 27°01	61	142	°3888
24	0°9268	1°2614	9°7553	0°8545	19 50 31°10	62	143	°3915
25	-0°9120	-1°2649	+9°7580	-0°8533	19 46 35°18	63	144	°3943
26	0°8967	1°2684	9°7606	0°8522	19 42 39°27	64	145	°3970
27	0°8806	1°2717	9°7633	0°8510	19 38 43°36	65	146	°3997
28	-0°8638	-1°2748	+9°7660	-0°8499	19 34 47°45	66	147	°4025
29	0°8462	1°2778	9°7686	0°8488	19 30 51°54	67	148	°4052
30	0°8278	1°2807	9°7713	0°8478	19 26 55°62	68	149	°4079
31	0°8084	1°2834	9°7740	0°8467	19 22 59°71	69	150	°4107
32	-0°7879	-1°2860	+9°7766	-0°8457	19 19 3°80	70	151	°4134

* Add .0017 if Fraction be required for the time t , see page 363.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be <u>subt. from</u> added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Wed.	1	4 35 12.23	10.238	N.22 1 43.7	20.21	1 8.38	2 33.14	0.380
Thur.	2	4 39 17.93	10.254	22 9 48.7	19.24	1 8.44	2 24.03	0.396
Frid.	3	4 43 24.01	10.269	22 17 30.5	18.26	1 8.49	2 14.53	0.411
Sat.	4	4 47 30.46	10.283	22 24 48.8	17.28	1 8.54	2 4.66	0.425
Sun.	5	4 51 37.25	10.296	22 31 43.7	16.30	1 8.59	1 54.46	0.438
Mon.	6	4 55 44.36	10.308	22 38 14.9	15.31	1 8.64	1 43.94	0.450
Tues.	7	4 59 51.77	10.320	22 44 22.2	14.31	1 8.68	1 33.11	0.462
Wed.	8	5 3 59.46	10.331	22 50 5.6	13.30	1 8.72	1 22.02	0.473
Thur.	9	5 8 7.41	10.341	22 55 25.0	12.30	1 8.76	1 10.66	0.483
Frid.	10	5 12 15.60	10.350	23 0 20.2	11.29	1 8.80	0 59.06	0.492
Sat.	11	5 16 24.01	10.359	23 4 51.2	10.28	1 8.83	0 47.25	0.501
Sun.	12	5 20 32.62	10.366	23 8 57.8	9.26	1 8.86	0 35.22	0.508
Mon.	13	5 24 41.41	10.373	23 12 40.0	8.24	1 8.88	0 23.02	0.515
Tues.	14	5 28 50.36	10.379	23 15 57.8	7.22	1 8.90	0 10.66	0.521
Wed.	15	5 32 59.46	10.385	23 18 50.9	6.19	1 8.92	0 1.85	0.526
Thur.	16	5 37 8.69	10.389	23 21 19.5	5.16	1 8.94	0 14.48	0.531
Frid.	17	5 41 18.02	10.393	23 23 23.4	4.13	1 8.95	0 27.21	0.535
Sat.	18	5 45 27.44	10.396	23 25 2.6	3.10	1 8.96	0 40.04	0.538
Sun.	19	5 49 36.93	10.398	23 26 17.0	2.07	1 8.97	0 52.94	0.540
Mon.	20	5 53 46.48	10.399	23 27 6.6	1.04	1 8.97	1 5.89	0.541
Tues.	21	5 57 56.05	10.399	23 27 31.5	0.00	1 8.97	1 18.86	0.541
Wed.	22	6 2 5.62	10.398	23 27 31.5	1.03	1 8.96	1 31.84	0.540
Thur.	23	6 6 15.17	10.397	23 27 6.7	2.07	1 8.96	1 44.81	0.538
Frid.	24	6 10 24.69	10.394	23 26 17.1	3.10	1 8.95	1 57.72	0.535
Sat.	25	6 14 34.14	10.390	23 25 2.7	4.13	1 8.93	2 10.58	0.532
Sun.	26	6 18 43.50	10.385	23 23 23.5	5.16	1 8.92	2 23.35	0.527
Mon.	27	6 22 52.74	10.379	23 21 19.6	6.19	1 8.90	2 35.99	0.521
Tues.	28	6 27 1.84	10.372	23 18 51.0	7.22	1 8.87	2 48.49	0.513
Wed.	29	6 31 10.76	10.364	23 15 57.8	8.24	1 8.85	3 0.83	0.505
Thur.	30	6 35 19.49	10.354	23 12 40.0	9.26	1 8.82	3 12.96	0.497
Frid.	31	6 39 27.99		N.23 8 57.8		1 8.78	3 24.88	

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to subt. from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
Wed.	1	^h 4 ^m 35 ^s 12 ⁶⁷	[°] N.22 ['] 1 ["] 44 ⁶	['] 15 ["] 48 ²	^m 2 ^s 33 ¹²	^h 4 ^m 37 ^s 45 ⁷⁹
Thur.	2	4 39 18 ³⁴	22 9 49 ⁵	15 48 ⁰	2 24 ⁰¹	4 41 42 ³⁵
Frid.	3	4 43 24 ⁴⁰	22 17 31 ¹	15 47 ⁹	2 14 ⁵¹	4 45 38 ⁹¹
Sat.	4	4 47 30 ⁸²	22 24 49 ⁴	15 47 ⁸	2 4 ⁶⁵	4 49 35 ⁴⁷
Sun.	5	4 51 37 ⁵⁸	22 31 44 ²	15 47 ⁶	1 54 ⁴⁵	4 53 32 ⁰³
Mon.	6	4 55 44 ⁶⁶	22 38 15 ³	15 47 ⁵	1 43 ⁹³	4 57 28 ⁵⁹
Tues.	7	4 59 52 ⁰⁴	22 44 22 ⁶	15 47 ⁴	1 33 ¹⁰	5 1 25 ¹⁴
Wed.	8	5 3 59 ⁶⁹	22 50 5 ⁹	15 47 ³	1 22 ⁰¹	5 5 21 ⁷⁰
Thur.	9	5 8 7 ⁶¹	22 55 25 ²	15 47 ²	1 10 ⁶⁵	5 9 18 ²⁶
Frid.	10	5 12 15 ⁷⁷	23 0 20 ⁴	15 47 ¹	0 59 ⁰⁵	5 13 14 ⁸²
Sat.	11	5 16 24 ¹⁴	23 4 51 ³	15 47 ⁰	0 47 ²⁴	5 17 11 ³⁸
Sun.	12	5 20 32 ⁷²	23 8 57 ⁹	15 46 ⁹	0 35 ²²	5 21 7 ⁹⁴
Mon.	13	5 24 41 ⁴⁷	23 12 40 ¹	15 46 ⁸	0 23 ⁰²	5 25 4 ⁴⁹
Tues.	14	5 28 50 ³⁹	23 15 57 ⁸	15 46 ⁸	0 10 ⁶⁶	5 29 1 ⁰⁵
Wed.	15	5 32 59 ⁴⁶	23 18 50 ⁹	15 46 ⁷	0 1 ⁸⁵	5 32 57 ⁶¹
Thur.	16	5 37 8 ⁶⁵	23 21 19 ⁵	15 46 ⁶	0 14 ⁴⁸	5 36 54 ¹⁷
Frid.	17	5 41 17 ⁹⁴	23 23 23 ³	15 46 ⁶	0 27 ²¹	5 40 50 ⁷³
Sat.	18	5 45 27 ³²	23 25 2 ⁵	15 46 ⁵	0 40 ⁰³	5 44 47 ²⁹
Sun.	19	5 49 36 ⁷⁸	23 26 17 ⁰	15 46 ⁵	0 52 ⁹³	5 48 43 ⁸⁵
Mon.	20	5 53 46 ²⁹	23 27 6 ⁶	15 46 ⁴	1 5 ⁸⁸	5 52 40 ⁴¹
Tues.	21	5 57 55 ⁸²	23 27 31 ⁵	15 46 ³	1 18 ⁸⁵	5 56 36 ⁹⁷
Wed.	22	6 2 5 ³⁵	23 27 31 ⁶	15 46 ²	1 31 ⁸³	6 0 33 ⁵²
Thur.	23	6 6 14 ⁸⁷	23 27 6 ⁸	15 46 ²	1 44 ⁷⁹	6 4 30 ⁰⁸
Frid.	24	6 10 24 ³⁵	23 26 17 ²	15 46 ¹	1 57 ⁷⁰	6 8 26 ⁶⁴
Sat.	25	6 14 33 ⁷⁶	23 25 2 ⁸	15 46 ¹	2 10 ⁵⁶	6 12 23 ²⁰
Sun.	26	6 18 43 ⁰⁹	23 23 23 ⁷	15 46 ¹	2 23 ³³	6 16 19 ⁷⁶
Mon.	27	6 22 52 ²⁹	23 21 19 ⁸	15 46 ⁰	2 35 ⁹⁷	6 20 16 ³²
Tues.	28	6 27 1 ³⁵	23 18 51 ³	15 46 ⁰	2 48 ⁴⁷	6 24 12 ⁸⁸
Wed.	29	6 31 10 ²⁴	23 15 58 ²	15 46 ⁰	3 0 ⁸⁰	6 28 9 ⁴⁴
Thur.	30	6 35 18 ⁹³	23 12 40 ⁵	15 46 ⁰	3 12 ⁹⁴	6 32 5 ⁹⁹
Frid.	31	6 39 27 ⁴⁰	N.23 8 58 ⁴	15 46 ⁰	3 24 ⁸⁵	6 36 2 ⁵⁵

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	70° 24' 59".1	N. 0° 61'	0.0062258	16' 21".8	16' 25".2	59' 54".8	60' 7".2
2	71 22 27.7	0° 54'	0.0062862	16 27.7	16 29.2	60 16.3	60 21.6
3	72 19 55.3	0° 45'	0.0063443	16 29.6	16 29.1	60 23.3	60 21.5
4	73 17 21.8	0° 33'	0.0064001	16 27.7	16 25.5	60 16.4	60 8.3
5	74 14 47.3	0° 20'	0.0064536	16 22.6	16 19.0	59 57.6	59 44.6
6	75 12 11.6	N. 0° 06'	0.0065049	16 15.0	16 10.6	59 29.8	59 13.7
7	76 9 34.7	S. 0° 08'	0.0065541	16 5.9	16 1.0	58 56.5	58 38.8
8	77 6 56.8	0° 21'	0.0066013	15 56.1	15 51.1	58 20.6	58 2.4
9	78 4 17.8	0° 32'	0.0066466	15 46.1	15 41.3	57 44.3	57 26.5
10	79 1 37.8	0° 43'	0.0066902	15 36.5	15 31.9	57 9.1	56 52.2
11	79 58 56.9	0° 51'	0.0067321	15 27.4	15 23.1	56 35.8	56 20.0
12	80 56 15.1	0° 55'	0.0067724	15 19.0	15 15.0	56 4.9	55 50.3
13	81 53 32.4	0° 57'	0.0068114	15 11.2	15 7.6	55 36.5	55 23.2
14	82 50 48.9	0° 57'	0.0068490	15 4.2	15 1.0	55 10.7	54 59.0
15	83 48 4.8	0° 53'	0.0068851	14 58.1	14 55.4	54 48.2	54 38.3
16	84 45 20.1	0° 46'	0.0069199	14 52.9	14 50.8	54 29.4	54 21.7
17	85 42 34.9	0° 37'	0.0069532	14 49.0	14 47.7	54 15.2	54 10.2
18	86 39 49.3	0° 26'	0.0069851	14 46.7	14 46.2	54 6.6	54 4.9
19	87 37 3.5	0° 13'	0.0070155	14 46.3	14 46.8	54 5.0	54 7.0
20	88 34 17.5	S. 0° 01'	0.0070444	14 47.9	14 49.6	54 11.1	54 17.4
21	89 31 31.3	N. 0° 12'	0.0070716	14 52.0	14 55.0	54 26.0	54 36.9
22	90 28 44.9	0° 24'	0.0070969	14 58.6	15 2.9	54 50.2	55 5.9
23	91 25 58.5	0° 34'	0.0071203	15 7.8	15 13.4	55 24.0	55 44.3
24	92 23 12.0	0° 42'	0.0071417	15 19.5	15 26.1	56 6.6	56 30.9
25	93 20 25.6	0° 48'	0.0071608	15 33.2	15 40.6	56 56.7	57 23.8
26	94 17 39.2	0° 51'	0.0071775	15 48.2	15 55.8	57 51.6	58 19.7
27	95 14 52.8	0° 50'	0.0071919	16 3.4	16 10.8	58 47.5	59 14.4
28	96 12 6.3	0° 47'	0.0072038	16 17.6	16 23.9	59 39.6	60 2.6
29	97 9 19.8	0° 41'	0.0072131	16 29.4	16 33.9	60 22.6	60 39.2
30	98 6 33.2	0° 32'	0.0072198	16 37.4	16 39.6	60 51.8	60 59.9
31	99 3 46.6	N. 0° 21'	0.0072238	16 40.6	16 40.3	61 3.6	61 2.7

MEAN TIME.

THE MOON'S

Day of the Week.	Day of the Month.	Longitude.		Latitude.		Age.	Meridian Passage.	
		Noon.	Midnight.	Noon.	Midnight.	Noon.		
		° ' "	° ' "	° ' "	° ' "	d	h	m
Wed.	1	73 9 40.6	80 29 25.1	N.4 43 48.7	N.4 28 18.4	0.2	0	6.8
Thur.	2	87 51 18.1	95 14 19.1	4 8 15.3	3 43 58.3	1.2	1	11.8
Frid.	3	102 37 28.7	109 59 51.1	3 15 53.7	2 44 33.1	2.2	2	16.4
Sat.	4	117 20 36.4	124 39 1.7	2 10 32.8	1 34 31.4	3.2	3	17.7
Sun.	5	131 54 32.3	139 6 41.5	N.0 57 9.4	N.0 19 7.5	4.2	4	14.4
Mon.	6	146 15 10.5	153 19 47.7	S.0 18 54.7	S.0 56 19.7	5.2	5	6.4
Tue.	7	160 20 27.5	167 17 9.3	1 32 33.3	2 7 3.6	6.2	5	55.0
Wed.	8	174 9 55.8	180 58 53.0	2 39 22.9	3 9 6.6	7.2	6	41.4
Thur.	9	187 44 7.4	194 25 47.1	3 35 53.6	3 59 27.0	8.2	7	27.2
Frid.	10	201 3 59.6	207 38 52.5	4 19 33.0	4 36 0.7	9.2	8	13.5
Sat.	11	214 10 32.0	220 39 3.7	4 48 43.0	4 57 35.6	10.2	9	1.3
Sun.	12	227 4 32.2	233 27 0.7	5 2 37.6	5 3 49.8	11.2	9	51.2
Mon.	13	239 46 32.2	246 3 9.6	5 1 17.2	4 55 6.2	12.2	10	43.1
Tue.	14	252 16 55.8	258 27 54.0	4 45 25.8	4 32 27.1	13.2	11	36.2
Wed.	15	264 36 9.3	270 41 47.6	4 16 22.8	3 57 27.8	14.2	12	29.2
Thur.	16	276 44 57.6	282 45 49.7	3 35 57.4	3 12 7.9	15.2	13	20.7
Frid.	17	288 44 37.7	294 41 37.6	2 46 17.0	2 18 41.8	16.2	14	9.6
Sat.	18	300 37 8.7	306 31 33.3	1 49 40.8	1 19 31.5	17.2	14	55.6
Sun.	19	312 25 16.5	318 18 46.0	S.0 48 31.9	S.0 16 59.8	18.2	15	38.9
Mon.	20	324 12 32.4	330 7 8.5	N.0 14 46.8	N.0 46 30.1	19.2	16	20.2
Tue.	21	336 3 9.5	342 1 11.7	1 17 52.2	1 48 35.0	20.2	17	0.5
Wed.	22	348 1 53.1	354 5 52.3	2 18 20.0	2 46 48.8	21.2	17	40.7
Thur.	23	0 13 47.6	6 26 17.1	3 13 40.8	3 38 36.6	22.2	18	22.3
Frid.	24	12 43 56.5	19 7 19.5	4 1 14.8	4 21 13.9	23.2	19	6.5
Sat.	25	25 36 55.3	32 13 8.2	4 38 12.0	4 51 47.0	24.2	19	54.6
Sun.	26	38 56 15.5	45 46 26.7	5 1 37.0	5 7 21.5	25.2	20	48.1
Mon.	27	52 43 41.2	59 47 48.7	5 8 42.6	5 5 25.3	26.2	21	47.2
Tue.	28	66 58 27.0	74 15 2.5	4 57 18.7	4 44 19.1	27.2	22	51.1
Wed.	29	81 36 50.4	89 2 56.0	4 26 28.5	4 3 57.3	28.2	23	57.1
Thur.	30	96 32 16.9	104 3 44.4	3 37 4.2	3 6 16.0	29.2	♄	
Frid.	31	111 36 7.8	119 8 16.3	N.2 32 7.1	N.1 55 16.7	0.9	1	1.7

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 1.				FRIDAY 3.			
0	^h 4 ^m 44 ^s 18 ⁹⁴	N.27 5 22 ⁶	35 ³¹	0	^h 6 ^m 56 ^s 15 ³⁷	N.26 6 35 ²	61 ³⁷
1	4 47 1 ⁹⁰	27 8 54 ⁵	33 ³⁶	1	6 58 57 ⁵³	26 0 27 ⁰	63 ²⁵
2	4 49 45 ¹²	27 12 14 ⁷	31 ⁴¹	2	7 1 39 ³⁸	25 54 7 ⁴	65 ¹¹
3	4 52 28 ⁶¹	27 15 23 ¹	29 ⁴⁴	3	7 4 20 ⁹³	25 47 36 ⁷	66 ⁹⁶
4	4 55 12 ³⁴	27 18 19 ⁸	27 ⁴⁶	4	7 7 2 ¹⁶	25 40 54 ⁹	68 ⁸⁰
5	4 57 56 ³¹	27 21 4 ⁶	25 ⁴⁸	5	7 9 43 ⁰⁷	25 34 2 ¹	70 ⁶²
6	5 0 40 ⁵¹	27 23 37 ⁵	23 ⁴⁸	6	7 12 23 ⁶⁴	25 26 58 ³	72 ⁴³
7	5 3 24 ⁹¹	27 25 58 ⁴	21 ⁴⁸	7	7 15 3 ⁸⁷	25 19 43 ⁷	74 ²²
8	5 6 9 ⁵²	27 28 7 ³	19 ⁴⁷	8	7 17 43 ⁷⁵	25 12 18 ⁴	76 ⁰⁰
9	5 8 54 ³²	27 30 4 ¹	17 ⁴⁵	9	7 20 23 ²⁷	25 4 42 ⁴	77 ⁷⁶
10	5 11 39 ³⁰	27 31 48 ⁸	15 ⁴²	10	7 23 2 ⁴³	24 56 55 ⁸	79 ⁵⁰
11	5 14 24 ⁴⁵	27 33 21 ⁴	13 ³⁹	11	7 25 41 ²²	24 48 58 ⁷	81 ²³
12	5 17 9 ⁷⁵	27 34 41 ⁸	11 ³⁵	12	7 28 19 ⁶³	24 40 51 ³	82 ⁹⁴
13	5 19 55 ¹⁹	27 35 49 ⁹	9 ³⁰	13	7 30 57 ⁶⁶	24 32 33 ⁶	84 ⁶³
14	5 22 40 ⁷⁶	27 36 45 ⁸	7 ²⁶	14	7 33 35 ⁴⁹	24 24 5 ⁸	86 ³¹
15	5 25 26 ⁴⁵	27 37 29 ³	5 ²⁰	15	7 36 12 ⁵³	24 15 27 ⁹	87 ⁹⁷
16	5 28 12 ²⁴	27 38 0 ⁶	3 ¹⁵	16	7 38 49 ³⁷	24 6 40 ¹	89 ⁶¹
17	5 30 58 ¹¹	27 38 19 ⁵	1 ⁰⁹	17	7 41 25 ⁸¹	23 57 42 ⁴	91 ²³
18	5 33 44 ⁰⁷	27 38 26 ⁰	0 ⁹⁷	18	7 44 1 ⁸³	23 48 35 ⁰	92 ⁸⁴
19	5 36 30 ⁰⁹	27 38 20 ²	3 ⁰³	19	7 46 37 ⁴³	23 39 17 ⁹	94 ⁴²
20	5 39 16 ¹⁵	27 38 2 ⁰	5 ¹⁰	20	7 49 12 ⁶²	23 29 51 ³	95 ⁹⁹
21	5 42 2 ²⁶	27 37 31 ⁴	7 ¹⁶	21	7 51 47 ³⁸	23 20 15 ³	97 ⁵⁴
22	5 44 48 ³⁹	27 36 48 ⁴	9 ²³	22	7 54 21 ⁷¹	23 10 30 ⁰	99 ⁰⁷
23	5 47 34 ⁵⁴	N.27 35 53 ⁰	11 ³⁰	23	7 56 55 ⁶¹	N.23 0 35 ⁵	100 ⁵⁹
THURSDAY 2.				SATURDAY 4.			
0	5 50 20 ⁶⁹	N.27 34 45 ²	13 ³⁷	0	7 59 29 ⁰⁷	N.22 50 32 ⁰	102 ⁰⁸
1	5 53 6 ⁸²	27 33 25 ⁰	15 ⁴³	1	8 2 2 ⁰⁹	22 40 19 ⁵	103 ⁵⁵
2	5 55 52 ⁹²	27 31 52 ³	17 ⁵⁰	2	8 4 34 ⁶⁷	22 29 58 ²	105 ⁰⁰
3	5 58 38 ⁹⁸	27 30 7 ³	19 ⁵⁶	3	8 7 6 ⁸⁰	22 19 28 ¹	106 ⁴⁴
4	6 1 24 ⁹⁹	27 28 9 ⁹	21 ⁶²	4	8 9 38 ⁴⁹	22 8 49 ⁵	107 ⁸⁵
5	6 4 10 ⁹⁴	27 26 0 ²	23 ⁶⁷	5	8 12 9 ⁷³	21 58 2 ³	109 ²⁵
6	6 6 56 ⁸⁰	27 23 38 ¹	25 ⁷²	6	8 14 40 ⁵²	21 47 6 ⁸	110 ⁶²
7	6 9 42 ⁵⁸	27 21 3 ⁷	27 ⁷⁷	7	8 17 10 ⁸⁶	21 36 3 ¹	111 ⁹⁷
8	6 12 28 ²⁵	27 18 17 ¹	29 ⁸¹	8	8 19 40 ⁷⁴	21 24 51 ²	113 ³¹
9	6 15 13 ⁸⁰	27 15 18 ²	31 ⁸⁵	9	8 22 10 ¹⁷	21 13 31 ³	114 ⁶²
10	6 17 59 ²³	27 12 7 ¹	33 ⁸⁸	10	8 24 39 ¹⁴	21 2 3 ⁵	115 ⁹²
11	6 20 44 ⁵²	27 8 43 ⁸	35 ⁹⁰	11	8 27 7 ⁶⁵	20 50 28 ⁰	117 ¹⁹
12	6 23 29 ⁶⁶	27 5 8 ⁴	37 ⁹²	12	8 29 35 ⁷¹	20 38 44 ⁸	118 ⁴⁴
13	6 26 14 ⁶⁴	27 1 20 ⁹	39 ⁹²	13	8 32 3 ³¹	20 26 54 ¹	119 ⁶⁸
14	6 28 59 ⁴⁴	26 57 21 ³	41 ⁹²	14	8 34 30 ⁴⁵	20 14 56 ⁰	120 ⁸⁹
15	6 31 44 ⁰⁵	26 53 9 ⁷	43 ⁹¹	15	8 36 57 ¹⁴	20 2 50 ⁶	122 ⁰⁸
16	6 34 28 ⁴⁷	26 48 46 ²	45 ⁹⁰	16	8 39 23 ³⁷	19 50 38 ¹	123 ²⁶
17	6 37 12 ⁶⁷	26 44 10 ⁸	47 ⁸⁷	17	8 41 49 ¹⁴	19 38 18 ⁵	124 ⁴¹
18	6 39 56 ⁶⁶	26 39 23 ⁶	49 ⁸³	18	8 44 14 ⁴⁶	19 25 52 ⁰	125 ⁵⁴
19	6 42 40 ⁴¹	26 34 24 ⁵	51 ⁷⁸	19	8 46 39 ³³	19 13 18 ⁸	126 ⁶⁵
20	6 45 23 ⁹³	26 29 13 ⁸	53 ⁷²	20	8 49 3 ⁷⁴	19 0 38 ⁸	127 ⁷⁵
21	6 48 7 ¹⁹	26 23 51 ⁵	55 ⁶⁵	21	8 51 27 ⁷⁰	18 47 52 ³	128 ⁸²
22	6 50 50 ¹⁹	26 18 17 ⁵	57 ⁵⁷	22	8 53 51 ²¹	18 34 59 ³	129 ⁸⁷
23	6 53 32 ⁹²	26 12 32 ¹	59 ⁴⁷	23	8 56 14 ²⁷	18 22 0 ¹	130 ⁹¹
24	6 56 15 ³⁷	N.26 6 35 ²		24	8 58 36 ⁸⁹	N.18 8 54 ⁶	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
SUNDAY 5.				TUESDAY 7.			
0	h m s 8 58 36.89	N. 18 8 54.6	131.92	0	h m s 10 45 4.37	N. 6 16 6.5	158.98
1	9 0 59.06	17 55 43.1	132.91	1	10 47 9.76	6 0 12.6	159.14
2	9 3 26.78	17 42 25.6	133.88	2	10 49 14.92	5 44 17.7	159.29
3	9 5 42.07	17 29 2.3	134.83	3	10 51 19.85	5 28 21.9	159.43
4	9 8 2.92	17 15 33.2	135.77	4	10 53 24.57	5 12 25.3	159.55
5	9 10 23.33	17 1 58.6	136.68	5	10 55 29.08	4 56 28.0	159.66
6	9 12 43.31	16 48 18.5	137.57	6	10 57 33.38	4 40 30.0	159.75
7	9 15 2.86	16 34 33.0	138.45	7	10 59 37.49	4 24 31.5	159.83
8	9 17 21.99	16 20 42.3	139.31	8	11 1 41.40	4 8 32.5	159.89
9	9 19 40.69	16 6 46.4	140.14	9	11 3 45.12	3 52 33.1	159.95
10	9 21 58.97	15 52 45.6	140.96	10	11 5 48.66	3 36 33.4	159.98
11	9 24 16.83	15 38 39.8	141.76	11	11 7 52.03	3 20 33.5	160.01
12	9 26 34.29	15 24 29.2	142.53	12	11 9 55.22	3 4 33.4	160.02
13	9 28 51.33	15 10 14.0	143.29	13	11 11 58.25	2 48 33.2	160.02
14	9 31 7.97	14 55 54.2	144.03	14	11 14 1.11	2 32 33.1	160.01
15	9 33 24.20	14 41 30.0	144.76	15	11 16 3.83	2 16 33.0	159.98
16	9 35 40.04	14 27 1.4	145.46	16	11 18 6.39	2 0 33.1	159.94
17	9 37 55.48	14 12 28.6	146.15	17	11 20 8.81	1 44 33.5	159.88
18	9 40 10.53	13 57 51.7	146.82	18	11 22 11.08	1 28 34.2	159.82
19	9 42 25.20	13 43 10.7	147.47	19	11 24 13.23	1 12 35.2	159.74
20	9 44 39.49	13 28 25.9	148.10	20	11 26 15.25	0 56 36.7	159.65
21	9 46 53.40	13 13 37.3	148.71	21	11 28 17.14	0 40 38.8	159.54
22	9 49 6.93	12 58 45.0	149.31	22	11 30 18.92	0 24 41.5	159.43
23	9 51 20.10	N. 12 43 49.1	149.89	23	11 32 20.59	N. 0 8 44.9	159.30
MONDAY 6.				WEDNESDAY 8.			
0	9 53 32.91	N. 12 28 49.8	150.44	0	11 34 22.15	S. 0 7 10.9	159.16
1	9 55 45.36	12 13 47.1	150.99	1	11 36 23.61	0 23 5.9	159.01
2	9 57 57.45	11 58 41.1	151.51	2	11 38 24.98	0 39 0.0	158.84
3	10 0 9.20	11 43 32.0	152.02	3	11 40 26.26	0 54 53.0	158.66
4	10 2 20.60	11 28 19.9	152.52	4	11 42 27.45	1 10 45.0	158.47
5	10 4 31.66	11 13 4.8	152.99	5	11 44 28.57	1 26 35.9	158.27
6	10 6 42.39	10 57 46.8	153.45	6	11 46 29.61	1 42 25.6	158.06
7	10 8 52.80	10 42 26.0	153.89	7	11 48 30.58	1 58 14.0	157.83
8	10 11 2.87	10 27 2.7	154.32	8	11 50 31.49	2 14 1.0	157.60
9	10 13 12.63	10 11 36.7	154.73	9	11 52 32.34	2 29 46.6	157.35
10	10 15 22.08	9 56 8.3	155.12	10	11 54 33.14	2 45 30.7	157.09
11	10 17 31.21	9 40 37.6	155.50	11	11 56 33.89	3 1 13.3	156.82
12	10 19 40.05	9 25 4.6	155.86	12	11 58 34.60	3 16 54.2	156.53
13	10 21 48.59	9 9 29.4	156.20	13	12 0 35.27	3 32 33.4	156.24
14	10 23 56.83	8 53 52.2	156.53	14	12 2 35.91	3 48 10.9	155.93
15	10 26 4.79	8 38 13.0	156.84	15	12 4 36.52	4 3 46.5	155.61
16	10 28 12.46	8 22 31.9	157.14	16	12 6 37.10	4 19 20.2	155.28
17	10 30 19.86	8 6 49.0	157.42	17	12 8 37.67	4 34 51.9	154.94
18	10 32 26.99	7 51 4.5	157.69	18	12 10 38.23	4 50 21.6	154.59
19	10 34 33.85	7 35 18.3	157.94	19	12 12 38.78	5 5 49.2	154.23
20	10 36 40.45	7 19 30.6	158.18	20	12 14 39.33	5 21 14.6	153.86
21	10 38 46.79	7 3 41.5	158.40	21	12 16 39.88	5 36 37.7	153.47
22	10 40 52.89	6 47 51.0	158.61	22	12 18 40.44	5 51 58.6	153.07
23	10 42 58.75	6 31 59.3	158.80	23	12 20 41.01	6 7 17.1	152.67
24	10 45 4.37	N. 6 16 6.5		24	12 22 41.59	S. 6 22 33.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
THURSDAY 9.				SATURDAY 11.			
0	12 22 41 ^m 59 ^s	S. 6 22 33 ^o 1 ⁿ	152 ^o 25 ⁿ	0	14 0 51 ^m 39 ^s	S. 17 26 41 ^o 9 ⁿ	119 ^o 81 ⁿ
1	12 24 42 ^m 20 ^s	6 37 46 ^o 6 ⁿ	151 ^o 82 ⁿ	1	14 2 57 ^m 65 ^s	17 38 40 ^o 8 ⁿ	118 ^o 88 ⁿ
2	12 26 42 ^m 83 ^s	6 52 57 ^o 6 ⁿ	151 ^o 38 ⁿ	2	14 5 4 ^m 09 ^s	17 50 34 ^o 1 ⁿ	117 ^o 95 ⁿ
3	12 28 43 ^m 49 ^s	7 8 6 ^o 0 ⁿ	150 ^o 93 ⁿ	3	14 7 10 ^m 73 ^s	18 2 21 ^o 8 ⁿ	117 ^o 00 ⁿ
4	12 30 44 ^m 19 ^s	7 23 11 ^o 6 ⁿ	150 ^o 47 ⁿ	4	14 9 17 ^m 56 ^s	18 14 3 ^o 9 ⁿ	116 ^o 05 ⁿ
5	12 32 44 ^m 93 ^s	7 38 14 ^o 5 ⁿ	150 ^o 00 ⁿ	5	14 11 24 ^m 58 ^s	18 25 40 ^o 2 ⁿ	115 ^o 08 ⁿ
6	12 34 45 ^m 72 ^s	7 53 14 ^o 5 ⁿ	149 ^o 52 ⁿ	6	14 13 31 ^m 81 ^s	18 37 10 ^o 7 ⁿ	114 ^o 11 ⁿ
7	12 36 46 ^m 55 ^s	8 8 11 ^o 6 ⁿ	149 ^o 03 ⁿ	7	14 15 39 ^m 23 ^s	18 48 35 ^o 4 ⁿ	113 ^o 12 ⁿ
8	12 38 47 ^m 44 ^s	8 23 5 ^o 8 ⁿ	148 ^o 52 ⁿ	8	14 17 46 ^m 84 ^s	18 59 54 ^o 2 ⁿ	112 ^o 13 ⁿ
9	12 40 48 ^m 38 ^s	8 37 57 ^o 0 ⁿ	148 ^o 01 ⁿ	9	14 19 54 ^m 66 ^s	19 11 7 ^o 0 ⁿ	111 ^o 13 ⁿ
10	12 42 49 ^m 39 ^s	8 52 45 ^o 1 ⁿ	147 ^o 48 ⁿ	10	14 22 2 ^m 68 ^s	19 22 13 ^o 8 ⁿ	110 ^o 11 ⁿ
11	12 44 50 ^m 45 ^s	9 7 30 ^o 0 ⁿ	146 ^o 95 ⁿ	11	14 24 10 ^m 90 ^s	19 33 14 ^o 5 ⁿ	109 ^o 09 ⁿ
12	12 46 51 ^m 59 ^s	9 22 11 ^o 7 ⁿ	146 ^o 40 ⁿ	12	14 26 19 ^m 32 ^s	19 44 9 ^o 1 ⁿ	108 ^o 06 ⁿ
13	12 48 52 ^m 80 ^s	9 36 50 ^o 1 ⁿ	145 ^o 84 ⁿ	13	14 28 27 ^m 95 ^s	19 54 57 ^o 5 ⁿ	107 ^o 02 ⁿ
14	12 50 54 ^m 10 ^s	9 51 25 ^o 2 ⁿ	145 ^o 27 ⁿ	14	14 30 36 ^m 78 ^s	20 5 39 ^o 7 ⁿ	105 ^o 97 ⁿ
15	12 52 55 ^m 47 ^s	10 5 56 ^o 9 ⁿ	144 ^o 70 ⁿ	15	14 32 45 ^m 81 ^s	20 16 15 ^o 6 ⁿ	104 ^o 91 ⁿ
16	12 54 56 ^m 94 ^s	10 20 25 ^o 1 ⁿ	144 ^o 11 ⁿ	16	14 34 55 ^m 05 ^s	20 26 45 ^o 1 ⁿ	103 ^o 84 ⁿ
17	12 56 58 ^m 49 ^s	10 34 49 ^o 8 ⁿ	143 ^o 51 ⁿ	17	14 37 4 ^m 50 ^s	20 37 8 ^o 2 ⁿ	102 ^o 76 ⁿ
18	12 59 0 ^m 14 ^s	10 49 10 ^o 9 ⁿ	142 ^o 90 ⁿ	18	14 39 14 ^m 15 ^s	20 47 24 ^o 8 ⁿ	101 ^o 68 ⁿ
19	13 1 1 ^m 89 ^s	11 3 28 ^o 3 ⁿ	142 ^o 28 ⁿ	19	14 41 24 ^m 01 ^s	20 57 34 ^o 9 ⁿ	100 ^o 58 ⁿ
20	13 3 3 ^m 74 ^s	11 17 42 ^o 0 ⁿ	141 ^o 65 ⁿ	20	14 43 34 ^m 07 ^s	21 7 38 ^o 4 ⁿ	99 ^o 47 ⁿ
21	13 5 5 ^m 70 ^s	11 31 51 ^o 9 ⁿ	141 ^o 00 ⁿ	21	14 45 44 ^m 34 ^s	21 17 35 ^o 2 ⁿ	98 ^o 36 ⁿ
22	13 7 7 ^m 77 ^s	11 45 57 ^o 9 ⁿ	140 ^o 35 ⁿ	22	14 47 54 ^m 81 ^s	21 27 25 ^o 4 ⁿ	97 ^o 23 ⁿ
23	13 9 9 ^m 96 ^s	S. 12 0 0 ^o 0 ⁿ	139 ^o 69 ⁿ	23	14 50 5 ^m 49 ^s	S. 21 37 8 ^o 9 ⁿ	96 ^o 10 ⁿ
FRIDAY 10.				SUNDAY 12.			
0	13 11 12 ^m 27 ^s	S. 12 13 58 ^o 2 ⁿ	139 ^o 02 ⁿ	0	14 52 16 ^m 37 ^s	S. 21 46 45 ^o 5 ⁿ	94 ^o 96 ⁿ
1	13 13 14 ^m 69 ^s	12 27 52 ^o 3 ⁿ	138 ^o 33 ⁿ	1	14 54 27 ^m 46 ^s	21 56 15 ^o 3 ⁿ	93 ^o 81 ⁿ
2	13 15 17 ^m 24 ^s	12 41 42 ^o 3 ⁿ	137 ^o 64 ⁿ	2	14 56 38 ^m 75 ^s	22 5 38 ^o 2 ⁿ	92 ^o 65 ⁿ
3	13 17 19 ^m 92 ^s	12 55 28 ^o 2 ⁿ	136 ^o 94 ⁿ	3	14 58 50 ^m 24 ^s	22 14 54 ^o 1 ⁿ	91 ^o 48 ⁿ
4	13 19 22 ^m 73 ^s	13 9 9 ^o 9 ⁿ	136 ^o 22 ⁿ	4	15 1 1 ^m 94 ^s	22 24 3 ^o 0 ⁿ	90 ^o 30 ⁿ
5	13 21 25 ^m 68 ^s	13 22 47 ^o 2 ⁿ	135 ^o 50 ⁿ	5	15 3 13 ^m 83 ^s	22 33 4 ^o 8 ⁿ	89 ^o 12 ⁿ
6	13 23 28 ^m 77 ^s	13 36 20 ^o 2 ⁿ	134 ^o 76 ⁿ	6	15 5 25 ^m 93 ^s	22 41 59 ^o 6 ⁿ	87 ^o 93 ⁿ
7	13 25 31 ^m 99 ^s	13 49 48 ^o 8 ⁿ	134 ^o 02 ⁿ	7	15 7 38 ^m 22 ^s	22 50 47 ^o 2 ⁿ	86 ^o 73 ⁿ
8	13 27 35 ^m 37 ^s	14 3 13 ^o 0 ⁿ	133 ^o 26 ⁿ	8	15 9 50 ^m 72 ^s	22 59 27 ^o 6 ⁿ	85 ^o 52 ⁿ
9	13 29 38 ^m 89 ^s	14 16 32 ^o 6 ⁿ	132 ^o 50 ⁿ	9	15 12 3 ^m 41 ^s	23 8 0 ^o 7 ⁿ	84 ^o 30 ⁿ
10	13 31 42 ^m 56 ^s	14 29 47 ^o 6 ⁿ	131 ^o 72 ⁿ	10	15 14 16 ^m 29 ^s	23 16 26 ^o 6 ⁿ	83 ^o 08 ⁿ
11	13 33 46 ^m 39 ^s	14 42 58 ^o 0 ⁿ	130 ^o 94 ⁿ	11	15 16 29 ^m 37 ^s	23 24 45 ^o 1 ⁿ	81 ^o 85 ⁿ
12	13 35 50 ^m 38 ^s	14 56 3 ^o 6 ⁿ	130 ^o 14 ⁿ	12	15 18 42 ^m 64 ^s	23 32 56 ^o 2 ⁿ	80 ^o 61 ⁿ
13	13 37 54 ^m 52 ^s	15 9 4 ^o 5 ⁿ	129 ^o 34 ⁿ	13	15 20 56 ^m 10 ^s	23 40 59 ^o 9 ⁿ	79 ^o 36 ⁿ
14	13 39 58 ^m 83 ^s	15 22 0 ^o 5 ⁿ	128 ^o 52 ⁿ	14	15 23 9 ^m 74 ^s	23 48 56 ^o 1 ⁿ	78 ^o 11 ⁿ
15	13 42 3 ^m 30 ^s	15 34 51 ^o 7 ⁿ	127 ^o 70 ⁿ	15	15 25 23 ^m 57 ^s	23 56 44 ^o 8 ⁿ	76 ^o 85 ⁿ
16	13 44 7 ^m 94 ^s	15 47 37 ^o 9 ⁿ	126 ^o 86 ⁿ	16	15 27 37 ^m 59 ^s	24 4 25 ^o 9 ⁿ	75 ^o 58 ⁿ
17	13 46 12 ^m 75 ^s	16 0 19 ^o 1 ⁿ	126 ^o 01 ⁿ	17	15 29 51 ^m 78 ^s	24 11 59 ^o 4 ⁿ	74 ^o 30 ⁿ
18	13 48 17 ^m 74 ^s	16 12 55 ^o 2 ⁿ	125 ^o 16 ⁿ	18	15 32 6 ^m 15 ^s	24 19 25 ^o 2 ⁿ	73 ^o 02 ⁿ
19	13 50 22 ^m 89 ^s	16 25 26 ^o 2 ⁿ	124 ^o 29 ⁿ	19	15 34 20 ^m 70 ^s	24 26 43 ^o 4 ⁿ	71 ^o 73 ⁿ
20	13 52 28 ^m 23 ^s	16 37 52 ^o 0 ⁿ	123 ^o 42 ⁿ	20	15 36 35 ^m 42 ^s	24 33 53 ^o 8 ⁿ	70 ^o 43 ⁿ
21	13 54 33 ^m 75 ^s	16 50 12 ^o 5 ⁿ	122 ^o 53 ⁿ	21	15 38 50 ^m 32 ^s	24 40 56 ^o 4 ⁿ	69 ^o 13 ⁿ
22	13 56 39 ^m 44 ^s	17 2 27 ^o 7 ⁿ	121 ^o 63 ⁿ	22	15 41 5 ^m 38 ^s	24 47 51 ^o 2 ⁿ	67 ^o 82 ⁿ
23	13 58 45 ^m 32 ^s	17 14 37 ^o 5 ⁿ	120 ^o 73 ⁿ	23	15 43 20 ^m 60 ^s	24 54 38 ^o 2 ⁿ	66 ^o 50 ⁿ
24	14 0 51 ^m 39 ^s	S. 17 26 41 ^o 9 ⁿ		24	15 45 35 ^m 99 ^s	S. 25 1 17 ^o 2 ⁿ	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 13.				WEDNESDAY 15.			
0	h m s	S. ° ' "	"	0	h m s	S. ° ' "	"
0	15 45 35.99	S. 25 1 17.2	65.18	0	17 35 41.52	S. 27 37 7.4	2.42
1	15 47 51.54	25 7 48.3	63.85	1	17 37 59.29	27 36 52.8	3.84
2	15 50 7.24	25 14 11.4	62.52	2	17 40 16.97	27 36 29.8	5.25
3	15 52 23.09	25 20 26.5	61.17	3	17 42 34.57	27 35 58.2	6.67
4	15 54 39.09	25 26 33.6	59.83	4	17 44 52.06	27 35 18.2	8.08
5	15 56 55.23	25 32 32.6	58.48	5	17 47 9.45	27 34 29.7	9.48
6	15 59 11.52	25 38 23.5	57.12	6	17 49 26.74	27 33 32.8	10.88
7	16 1 27.94	25 44 6.2	55.75	7	17 51 43.91	27 32 27.5	12.28
8	16 3 44.50	25 49 40.8	54.39	8	17 54 0.96	27 31 13.7	13.68
9	16 6 1.19	25 55 7.2	53.02	9	17 56 17.89	27 29 51.6	15.07
10	16 8 18.00	26 0 25.3	51.64	10	17 58 34.70	27 28 21.2	16.45
11	16 10 34.93	26 5 35.1	50.25	11	18 0 51.37	27 26 42.4	17.84
12	16 12 51.98	26 10 36.7	48.87	12	18 3 7.89	27 24 55.4	19.21
13	16 15 9.14	26 15 29.9	47.48	13	18 5 24.27	27 23 0.1	20.59
14	16 17 26.41	26 20 14.8	46.08	14	18 7 40.51	27 20 56.6	21.95
15	16 19 43.79	26 24 51.3	44.68	15	18 9 56.59	27 18 44.8	23.32
16	16 22 1.26	26 29 19.5	43.28	16	18 12 12.51	27 16 24.9	24.68
17	16 24 18.82	26 33 39.2	41.87	17	18 14 28.26	27 13 56.8	26.03
18	16 26 36.48	26 37 50.5	40.47	18	18 16 43.85	27 11 20.6	27.38
19	16 28 54.22	26 41 53.3	39.05	19	18 18 59.27	27 8 36.3	28.72
20	16 31 12.04	26 45 47.6	37.64	20	18 21 14.50	27 5 43.9	30.06
21	16 33 29.93	26 49 33.5	36.22	21	18 23 29.55	27 2 43.6	31.39
22	16 35 47.88	26 53 10.8	34.80	22	18 25 44.42	26 59 35.2	32.71
23	16 38 5.91	S. 26 56 39.6	33.38	23	18 27 59.10	S. 26 56 18.9	34.03
TUESDAY 14.				THURSDAY 16.			
0	h m s	S. ° ' "	"	0	h m s	S. ° ' "	"
0	16 40 23.99	S. 26 59 59.9	31.95	0	18 30 13.57	S. 26 52 54.7	35.35
1	16 42 42.13	27 3 11.6	30.52	1	18 32 27.85	26 49 22.6	36.65
2	16 45 0.31	27 6 14.8	29.09	2	18 34 41.93	26 45 42.7	37.95
3	16 47 18.54	27 9 9.4	27.66	3	18 36 55.79	26 41 54.9	39.24
4	16 49 36.81	27 11 55.4	26.23	4	18 39 9.45	26 37 59.4	40.53
5	16 51 55.11	27 14 32.8	24.80	5	18 41 22.89	26 33 56.2	41.81
6	16 54 13.43	27 17 1.6	23.36	6	18 43 36.12	26 29 45.4	43.08
7	16 56 31.78	27 19 21.8	21.93	7	18 45 49.12	26 25 26.9	44.34
8	16 58 50.15	27 21 33.4	20.49	8	18 48 1.90	26 21 0.8	45.60
9	17 1 8.52	27 23 36.4	19.05	9	18 50 14.45	26 16 27.2	46.85
10	17 3 26.90	27 25 30.8	17.62	10	18 52 26.76	26 11 46.1	48.09
11	17 5 45.27	27 27 16.5	16.18	11	18 54 38.84	26 6 57.5	49.32
12	17 7 8.36	27 28 53.6	14.74	12	18 56 50.69	26 2 1.5	50.55
13	17 10 22.00	27 30 52.1	13.30	13	18 59 2.29	25 56 58.2	51.77
14	17 12 40.34	27 31 41.9	11.87	14	19 1 13.65	25 51 47.6	52.98
15	17 14 58.66	27 32 53.1	10.43	15	19 3 24.76	25 46 29.7	54.18
16	17 17 16.94	27 33 55.8	9.00	16	19 5 35.61	25 41 4.6	55.37
17	17 19 35.20	27 34 49.8	7.56	17	19 7 46.22	25 35 32.3	56.56
18	17 21 53.41	27 35 35.2	6.13	18	19 9 56.57	25 29 52.9	57.74
19	17 24 11.58	27 36 12.0	4.70	19	19 12 6.67	25 24 6.4	58.91
20	17 26 29.69	27 36 40.2	3.27	20	19 14 16.50	25 18 12.9	60.08
21	17 28 47.75	27 36 59.8	1.84	21	19 16 26.08	25 12 12.4	61.23
22	17 31 5.74	27 37 10.9	0.42	22	19 18 35.39	25 6 5.0	62.38
23	17 33 23.67	27 37 13.4	1.00	23	19 20 44.44	24 59 50.7	63.52
24	17 35 41.52	S. 27 37 7.4		24	19 22 53.22	S. 24 53 29.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 17.				SUNDAY 19.			
0	19 22 53 ^m 22 ^s	S. 24 53 29 ^o 6 ⁿ	64 ^o 65 ⁿ	0	21 0 30 ^m 75 ^s	S. 17 51 59 ^o 7 ⁿ	108 ^o 50 ⁿ
1	19 25 1 ^m 73 ^s	24 47 1 ^o 7 ⁿ	65 ^o 77 ⁿ	1	21 2 26 ^m 31 ^s	17 41 8 ^o 7 ⁿ	109 ^o 20 ⁿ
2	19 27 9 ^m 97 ^s	24 40 27 ^o 0 ⁿ	66 ^o 88 ⁿ	2	21 4 21 ^m 63 ^s	17 30 13 ^o 4 ⁿ	109 ^o 89 ⁿ
3	19 29 17 ^m 94 ^s	24 33 45 ^o 7 ⁿ	67 ^o 99 ⁿ	3	21 6 16 ^m 71 ^s	17 19 14 ^o 0 ⁿ	110 ^o 58 ⁿ
4	19 31 25 ^m 63 ^s	24 26 57 ^o 8 ⁿ	69 ^o 08 ⁿ	4	21 8 11 ^m 57 ^s	17 8 10 ^o 5 ⁿ	111 ^o 26 ⁿ
5	19 33 33 ^m 05 ^s	24 20 3 ^o 2 ⁿ	70 ^o 17 ⁿ	5	21 10 6 ^m 20 ^s	16 57 3 ^o 0 ⁿ	111 ^o 92 ⁿ
6	19 35 40 ^m 20 ^s	24 13 2 ^o 2 ⁿ	71 ^o 24 ⁿ	6	21 12 0 ^m 60 ^s	16 45 51 ^o 4 ⁿ	112 ^o 58 ⁿ
7	19 37 47 ^m 07 ^s	24 5 54 ^o 7 ⁿ	72 ^o 31 ⁿ	7	21 13 54 ^m 77 ^s	16 34 35 ^o 9 ⁿ	113 ^o 24 ⁿ
8	19 39 53 ^m 66 ^s	23 58 40 ^o 8 ⁿ	73 ^o 37 ⁿ	8	21 15 48 ^m 73 ^s	16 23 16 ^o 4 ⁿ	113 ^o 88 ⁿ
9	19 41 59 ^m 97 ^s	23 51 20 ^o 5 ⁿ	74 ^o 42 ⁿ	9	21 17 42 ^m 47 ^s	16 11 53 ^o 1 ⁿ	114 ^o 52 ⁿ
10	19 44 6 ^m 00 ^s	23 43 53 ^o 9 ⁿ	75 ^o 47 ⁿ	10	21 19 36 ^m 00 ^s	16 0 26 ^o 0 ⁿ	115 ^o 15 ⁿ
11	19 46 11 ^m 76 ^s	23 36 21 ^o 1 ⁿ	76 ^o 50 ⁿ	11	21 21 29 ^m 31 ^s	15 48 55 ^o 0 ⁿ	115 ^o 77 ⁿ
12	19 48 17 ^m 23 ^s	23 28 42 ^o 1 ⁿ	77 ^o 52 ⁿ	12	21 23 22 ^m 42 ^s	15 37 20 ^o 4 ⁿ	116 ^o 38 ⁿ
13	19 50 22 ^m 42 ^s	23 20 57 ^o 0 ⁿ	78 ^o 53 ⁿ	13	21 25 15 ^m 32 ^s	15 25 42 ^o 1 ⁿ	116 ^o 98 ⁿ
14	19 52 27 ^m 34 ^s	23 13 5 ^o 7 ⁿ	79 ^o 54 ⁿ	14	21 27 8 ^m 02 ^s	15 14 0 ^o 2 ⁿ	117 ^o 58 ⁿ
15	19 54 31 ^m 97 ^s	23 5 8 ^o 5 ⁿ	80 ^o 54 ⁿ	15	21 29 0 ^m 52 ^s	15 2 14 ^o 6 ⁿ	118 ^o 17 ⁿ
16	19 56 36 ^m 31 ^s	22 57 5 ^o 2 ⁿ	81 ^o 52 ⁿ	16	21 30 52 ^m 83 ^s	14 50 25 ^o 6 ⁿ	118 ^o 75 ⁿ
17	19 58 40 ^m 38 ^s	22 48 56 ^o 0 ⁿ	82 ^o 50 ⁿ	17	21 32 44 ^m 94 ^s	14 38 33 ^o 0 ⁿ	119 ^o 33 ⁿ
18	20 0 44 ^m 17 ^s	22 40 41 ^o 0 ⁿ	83 ^o 47 ⁿ	18	21 34 36 ^m 86 ^s	14 26 37 ^o 0 ⁿ	119 ^o 89 ⁿ
19	20 2 47 ^m 67 ^s	22 32 20 ^o 1 ⁿ	84 ^o 44 ⁿ	19	21 36 28 ^m 60 ^s	14 14 37 ^o 6 ⁿ	120 ^o 45 ⁿ
20	20 4 50 ^m 90 ^s	22 23 53 ^o 5 ⁿ	85 ^o 39 ⁿ	20	21 38 20 ^m 15 ^s	14 2 34 ^o 9 ⁿ	121 ^o 01 ⁿ
21	20 6 53 ^m 84 ^s	22 15 21 ^o 1 ⁿ	86 ^o 33 ⁿ	21	21 40 11 ^m 52 ^s	13 50 28 ^o 8 ⁿ	121 ^o 55 ⁿ
22	20 8 56 ^m 50 ^s	22 6 43 ^o 1 ⁿ	87 ^o 27 ⁿ	22	21 42 2 ^m 72 ^s	13 38 19 ^o 5 ⁿ	122 ^o 09 ⁿ
23	20 10 58 ^m 89 ^s	S. 21 57 59 ^o 4 ⁿ	88 ^o 20 ⁿ	23	21 43 53 ^m 74 ^s	S. 13 26 6 ^o 9 ⁿ	122 ^o 62 ⁿ
SATURDAY 18.				MONDAY 20.			
0	20 13 0 ^m 99 ^s	S. 21 49 10 ^o 2 ⁿ	89 ^o 12 ⁿ	0	21 45 44 ^m 59 ^s	S. 13 13 51 ^o 2 ⁿ	123 ^o 14 ⁿ
1	20 15 2 ^m 82 ^s	21 40 15 ^o 5 ⁿ	90 ^o 02 ⁿ	1	21 47 35 ^m 28 ^s	13 1 32 ^o 3 ⁿ	123 ^o 65 ⁿ
2	20 17 4 ^m 36 ^s	21 31 15 ^o 3 ⁿ	90 ^o 92 ⁿ	2	21 49 25 ^m 81 ^s	12 49 10 ^o 4 ⁿ	124 ^o 16 ⁿ
3	20 19 5 ^m 63 ^s	21 22 9 ^o 7 ⁿ	91 ^o 81 ⁿ	3	21 51 16 ^m 18 ^s	12 36 45 ^o 4 ⁿ	124 ^o 66 ⁿ
4	20 21 6 ^m 63 ^s	21 12 58 ^o 8 ⁿ	92 ^o 69 ⁿ	4	21 53 6 ^m 39 ^s	12 24 17 ^o 4 ⁿ	125 ^o 15 ⁿ
5	20 23 7 ^m 35 ^s	21 3 42 ^o 6 ⁿ	93 ^o 57 ⁿ	5	21 54 56 ^m 45 ^s	12 11 46 ^o 5 ⁿ	125 ^o 64 ⁿ
6	20 25 7 ^m 79 ^s	20 54 21 ^o 2 ⁿ	94 ^o 44 ⁿ	6	21 56 46 ^m 36 ^s	11 59 12 ^o 6 ⁿ	126 ^o 12 ⁿ
7	20 27 7 ^m 97 ^s	20 44 54 ^o 6 ⁿ	95 ^o 29 ⁿ	7	21 58 36 ^m 13 ^s	11 46 35 ^o 9 ⁿ	126 ^o 59 ⁿ
8	20 29 7 ^m 87 ^s	20 35 22 ^o 8 ⁿ	96 ^o 13 ⁿ	8	22 0 25 ^m 76 ^s	11 33 56 ^o 3 ⁿ	127 ^o 05 ⁿ
9	20 31 7 ^m 50 ^s	20 25 46 ^o 0 ⁿ	96 ^o 97 ⁿ	9	22 2 15 ^m 26 ^s	11 21 14 ^o 0 ⁿ	127 ^o 51 ⁿ
10	20 33 6 ^m 86 ^s	20 16 4 ^o 1 ⁿ	97 ^o 80 ⁿ	10	22 4 4 ^m 62 ^s	11 8 28 ^o 9 ⁿ	127 ^o 96 ⁿ
11	20 35 5 ^m 96 ^s	20 6 17 ^o 3 ⁿ	98 ^o 62 ⁿ	11	22 5 53 ^m 86 ^s	10 55 41 ^o 1 ⁿ	128 ^o 41 ⁿ
12	20 37 4 ^m 79 ^s	19 56 25 ^o 5 ⁿ	99 ^o 43 ⁿ	12	22 7 42 ^m 96 ^s	10 42 50 ^o 6 ⁿ	128 ^o 84 ⁿ
13	20 39 3 ^m 36 ^s	19 46 28 ^o 9 ⁿ	100 ^o 23 ⁿ	13	22 9 31 ^m 95 ^s	10 29 57 ^o 5 ⁿ	129 ^o 27 ⁿ
14	20 41 1 ^m 67 ^s	19 36 27 ^o 5 ⁿ	101 ^o 03 ⁿ	14	22 11 20 ^m 82 ^s	10 17 1 ^o 9 ⁿ	129 ^o 69 ⁿ
15	20 42 59 ^m 71 ^s	19 26 21 ^o 3 ⁿ	101 ^o 81 ⁿ	15	22 13 9 ^m 57 ^s	10 4 3 ^o 7 ⁿ	130 ^o 11 ⁿ
16	20 44 57 ^m 50 ^s	19 16 10 ^o 4 ⁿ	102 ^o 59 ⁿ	16	22 14 58 ^m 22 ^s	9 51 3 ^o 0 ⁿ	130 ^o 52 ⁿ
17	20 46 55 ^m 03 ^s	19 5 54 ^o 8 ⁿ	103 ^o 36 ⁿ	17	22 16 46 ^m 77 ^s	9 37 59 ^o 8 ⁿ	130 ^o 92 ⁿ
18	20 48 52 ^m 31 ^s	18 55 34 ^o 7 ⁿ	104 ^o 12 ⁿ	18	22 18 35 ^m 21 ^s	9 24 54 ^o 3 ⁿ	131 ^o 32 ⁿ
19	20 50 49 ^m 34 ^s	18 45 9 ^o 9 ⁿ	104 ^o 87 ⁿ	19	22 20 23 ^m 56 ^s	9 11 46 ^o 4 ⁿ	131 ^o 71 ⁿ
20	20 52 46 ^m 11 ^s	18 34 40 ^o 7 ⁿ	105 ^o 61 ⁿ	20	22 22 11 ^m 81 ^s	8 58 36 ^o 1 ⁿ	132 ^o 09 ⁿ
21	20 54 42 ^m 64 ^s	18 24 7 ^o 0 ⁿ	106 ^o 34 ⁿ	21	22 23 59 ^m 97 ^s	8 45 23 ^o 6 ⁿ	132 ^o 46 ⁿ
22	20 56 38 ^m 92 ^s	18 13 28 ^o 9 ⁿ	107 ^o 07 ⁿ	22	22 25 48 ^m 05 ^s	8 32 8 ^o 8 ⁿ	132 ^o 83 ⁿ
23	20 58 34 ^m 96 ^s	18 2 46 ^o 5 ⁿ	107 ^o 79 ⁿ	23	22 27 36 ^m 05 ^s	8 18 51 ^o 8 ⁿ	133 ^o 19 ⁿ
24	21 0 30 ^m 75 ^s	S. 17 51 59 ^o 7 ⁿ		24	22 29 23 ^m 98 ^s	S. 8 5 32 ^o 6 ⁿ	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^{rs} .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^{rs} .
TUESDAY 21.				THURSDAY 23.			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	22 29 23.08	S. 8 5 32.6	133.55	0	23 55 41.90	N. 3 3 8.8	142.60
1	22 31 11.83	7 52 11.3	133.89	1	23 57 31.65	3 17 24.4	142.61
2	22 32 59.61	7 38 47.9	134.23	2	23 59 21.55	3 31 40.1	142.62
3	22 34 47.33	7 25 22.5	134.57	3	0 1 11.61	3 45 55.9	142.62
4	22 36 34.99	7 11 55.0	134.90	4	0 3 1.85	4 0 11.6	142.60
5	22 38 22.60	6 58 25.6	135.22	5	0 4 52.26	4 14 27.3	142.58
6	22 40 10.15	6 44 54.3	135.53	6	0 6 42.85	4 28 42.8	142.56
7	22 41 57.66	6 31 21.0	135.84	7	0 8 33.63	4 42 58.2	142.52
8	22 43 45.13	6 17 46.0	136.14	8	0 10 24.59	4 57 13.3	142.47
9	22 45 32.55	6 4 9.1	136.44	9	0 12 15.75	5 11 28.2	142.42
10	22 47 19.95	5 50 30.4	136.72	10	0 14 7.11	5 25 42.8	142.36
11	22 49 7.31	5 36 50.1	137.01	11	0 15 58.67	5 39 56.9	142.29
12	22 50 54.66	5 23 8.0	137.28	12	0 17 50.45	5 54 10.7	142.20
13	22 52 41.98	5 9 24.3	137.55	13	0 19 42.44	6 8 24.0	142.12
14	22 54 29.29	4 55 39.0	137.81	14	0 21 34.65	6 22 36.7	142.02
15	22 56 16.59	4 41 52.1	138.06	15	0 23 27.09	6 36 48.8	141.91
16	22 58 3.88	4 28 3.7	138.31	16	0 25 19.76	6 51 0.3	141.79
17	22 59 51.17	4 14 13.8	138.55	17	0 27 12.67	7 5 11.1	141.67
18	23 1 38.46	4 0 22.4	138.79	18	0 29 5.83	7 19 21.2	141.53
19	23 3 25.76	3 46 29.7	139.02	19	0 30 59.23	7 33 30.4	141.39
20	23 5 13.07	3 32 35.5	139.24	20	0 32 52.88	7 47 38.7	141.23
21	23 7 0.40	3 18 40.1	139.45	21	0 34 46.80	8 1 46.2	141.07
22	23 8 47.74	3 4 43.3	139.66	22	0 36 40.97	8 15 52.6	140.89
23	23 10 35.11	S. 2 50 45.3	139.86	23	0 38 35.42	N. 8 29 58.0	140.71
WEDNESDAY 22.				FRIDAY 24.			
0	23 12 22.52	S. 2 36 46.1	140.06	0	0 40 30.14	N. 8 44 2.3	140.52
1	23 14 9.96	2 22 45.7	140.25	1	0 42 25.14	8 58 5.4	140.31
2	23 15 57.44	2 8 44.2	140.43	2	0 44 20.43	9 12 7.3	140.10
3	23 17 44.97	1 54 41.6	140.61	3	0 46 16.01	9 26 8.0	139.87
4	23 19 32.54	1 40 37.9	140.77	4	0 48 11.88	9 40 7.2	139.64
5	23 21 20.17	1 26 33.2	140.93	5	0 50 8.06	9 54 5.1	139.39
6	23 23 7.86	1 12 27.6	141.09	6	0 52 4.55	10 8 1.4	139.13
7	23 24 55.61	0 58 21.0	141.23	7	0 54 1.34	10 21 56.3	138.86
8	23 26 43.43	0 44 13.6	141.37	8	0 55 58.46	10 35 49.5	138.58
9	23 28 31.32	0 30 5.3	141.50	9	0 57 55.89	10 49 41.0	138.29
10	23 30 19.29	0 15 56.3	141.63	10	0 59 53.66	11 3 30.8	137.99
11	23 32 7.35	S. 0 1 46.5	141.75	11	1 1 51.76	11 17 18.7	137.67
12	23 33 55.49	N. 0 12 24.0	141.86	12	1 3 50.19	11 31 4.8	137.35
13	23 35 43.73	0 26 35.1	141.96	13	1 5 48.97	11 44 48.9	137.01
14	23 37 32.06	0 40 46.9	142.05	14	1 7 48.10	11 58 31.0	136.66
15	23 39 20.50	0 54 59.2	142.14	15	1 9 47.59	12 12 11.0	136.30
16	23 41 9.05	1 9 12.1	142.22	16	1 11 47.43	12 25 48.8	135.92
17	23 42 57.70	1 23 25.5	142.29	17	1 13 47.65	12 39 24.4	135.54
18	23 44 46.48	1 37 39.3	142.36	18	1 15 48.23	12 52 57.6	135.14
19	23 46 35.38	1 51 53.5	142.42	19	1 17 49.19	13 6 28.5	134.72
20	23 48 24.41	2 6 8.0	142.47	20	1 19 50.53	13 19 56.8	134.30
21	23 50 13.57	2 20 22.9	142.51	21	1 21 52.26	13 33 22.6	133.86
22	23 52 2.87	2 34 38.0	142.55	22	1 23 54.38	13 46 45.8	133.41
23	23 53 52.31	2 48 53.3	142.58	23	1 25 56.89	14 0 6.3	132.94
24	23 55 41.90	N. 3 3 8.8		24	1 27 59.81	N. 14 13 24.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
SATURDAY 25.				MONDAY 27.			
0	h m s 1 27 59.81	N. 14 13 24.0	132.46	0	h m s 3 15 35.39	N. 23 26 23.9	90.35
1	1 30 3.14	14 26 38.8	131.97	1	3 18 2.64	23 35 26.0	89.02
2	1 32 6.88	14 39 50.7	131.46	2	3 20 30.43	23 44 20.2	87.67
3	1 34 11.03	14 52 59.5	130.94	3	3 22 58.75	23 53 6.2	86.29
4	1 36 15.61	15 6 5.2	130.41	4	3 25 27.61	24 1 44.0	84.90
5	1 38 20.62	15 19 7.7	129.86	5	3 27 57.00	24 10 13.4	83.49
6	1 40 26.06	15 32 6.8	129.29	6	3 30 26.92	24 18 34.4	82.06
7	1 42 31.93	15 45 2.6	128.72	7	3 32 57.37	24 26 46.8	80.61
8	1 44 38.24	15 57 55.0	128.12	8	3 35 28.35	24 34 50.5	79.14
9	1 46 45.00	16 10 43.7	127.51	9	3 37 59.84	24 42 45.4	77.65
10	1 48 52.21	16 23 28.8	126.89	10	3 40 31.86	24 50 31.4	76.14
11	1 50 59.87	16 36 10.2	126.25	11	3 43 4.39	24 58 8.3	74.62
12	1 53 7.99	16 48 47.7	125.60	12	3 45 37.43	25 5 36.0	73.07
13	1 55 16.57	17 1 21.3	124.92	13	3 48 10.98	25 12 54.4	71.50
14	1 57 25.62	17 13 50.9	124.24	14	3 50 45.04	25 20 3.5	69.91
15	1 59 35.15	17 26 16.3	123.53	15	3 53 19.59	25 27 3.0	68.31
16	2 1 45.15	17 38 37.6	122.81	16	3 55 54.63	25 33 52.9	66.68
17	2 3 55.63	17 50 54.5	122.08	17	3 58 30.17	25 40 33.0	65.04
18	2 6 6.59	18 3 7.0	121.33	18	4 1 6.19	25 47 3.3	63.38
19	2 8 18.04	18 15 15.0	120.56	19	4 3 42.68	25 53 23.6	61.70
20	2 10 29.98	18 27 18.3	119.77	20	4 6 19.65	25 59 33.8	60.00
21	2 12 42.42	18 39 17.0	118.97	21	4 8 57.08	26 5 33.8	58.29
22	2 14 55.35	18 51 10.8	118.15	22	4 11 34.97	26 11 23.6	56.55
23	2 17 8.79	N. 19 2 59.7	117.31	23	4 14 13.31	N. 26 17 2.9	54.81
SUNDAY 26.				TUESDAY 28.			
0	2 19 22.73	N. 19 14 43.6	116.45	0	4 16 52.09	N. 26 22 31.8	53.04
1	2 21 37.18	19 26 22.4	115.58	1	4 19 31.32	26 27 50.1	51.25
2	2 23 52.15	19 37 55.9	114.69	2	4 22 10.97	26 32 57.6	49.45
3	2 26 7.63	19 49 24.0	113.78	3	4 24 51.04	26 37 54.4	47.63
4	2 28 23.63	20 0 46.7	112.85	4	4 27 31.53	26 42 40.2	45.80
5	2 30 40.15	20 12 3.9	111.91	5	4 30 12.43	26 47 15.0	43.95
6	2 32 57.20	20 23 15.4	110.95	6	4 32 53.71	26 51 38.8	42.09
7	2 35 14.77	20 34 21.1	109.96	7	4 35 35.39	26 55 51.3	40.21
8	2 37 32.86	20 45 20.9	108.96	8	4 38 17.44	26 59 52.6	38.31
9	2 39 51.49	20 56 14.7	107.94	9	4 40 59.86	27 3 42.4	36.40
10	2 42 10.65	21 7 2.4	106.91	10	4 43 42.63	27 7 20.9	34.48
11	2 44 30.34	21 17 43.9	105.85	11	4 46 25.75	27 10 47.8	32.54
12	2 46 50.57	21 28 19.0	104.78	12	4 49 9.21	27 14 3.1	30.59
13	2 49 11.34	21 38 47.7	103.68	13	4 51 53.00	27 17 6.7	28.63
14	2 51 32.64	21 49 9.8	102.57	14	4 54 37.11	27 19 58.5	26.65
15	2 53 54.48	21 59 25.2	101.43	15	4 57 21.52	27 22 38.4	24.66
16	2 56 16.86	22 9 33.9	100.28	16	5 0 6.23	27 25 6.4	22.67
17	2 58 39.78	22 19 35.6	99.11	17	5 2 51.22	27 27 22.4	20.66
18	3 1 3.25	22 29 30.3	97.91	18	5 5 36.47	27 29 26.4	18.64
19	3 3 27.25	22 39 17.8	96.70	19	5 8 21.99	27 31 18.2	16.61
20	3 5 51.80	22 48 58.0	95.47	20	5 11 7.75	27 32 57.9	14.57
21	3 8 16.89	22 58 30.9	94.22	21	5 13 53.75	27 34 25.3	12.52
22	3 10 42.51	23 7 56.2	92.95	22	5 16 39.97	27 35 40.5	10.46
23	3 13 8.68	23 17 13.9	91.66	23	5 19 26.40	27 36 43.3	8.40
24	3 15 35.39	N. 23 26 23.9		24	5 22 13.03	N. 27 37 33.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
WEDNESDAY 29.				THURSDAY 30.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	5 22 13.03	N.27 37 33.7	6.32	0	6 29 17.15	N.26 54 40.4	44.16
1	5 24 59.85	27 38 11.7	4.24	1	6 32 4.42	26 50 15.4	46.23
2	5 27 46.83	27 38 37.1	2.16	2	6 34 51.54	26 45 38.0	48.30
3	5 30 33.98	27 38 50.1	0.06	3	6 37 38.50	26 40 48.2	50.35
4	5 33 21.27	27 38 50.5	2.02	4	6 40 25.30	26 35 46.0	52.40
5	5 36 8.69	27 38 38.3	4.12	5	6 43 11.91	26 30 31.6	54.43
6	5 38 56.23	27 38 13.6	6.23	6	6 45 58.33	26 25 5.0	56.46
7	5 41 43.88	27 37 36.2	8.34	7	6 48 44.54	26 19 26.2	58.47
8	5 44 31.62	27 36 46.1	10.45	8	6 51 30.54	26 13 35.3	60.48
9	5 47 19.44	27 35 43.3	12.57	9	6 54 16.31	26 7 32.4	62.47
10	5 50 7.33	27 34 27.9	14.68	10	6 57 1.84	26 1 17.6	64.46
11	5 52 55.27	27 32 59.8	16.80	11	6 59 47.12	25 54 50.8	66.43
12	5 55 43.25	27 31 19.0	18.92	12	7 2 32.15	25 48 12.2	68.38
13	5 58 31.26	27 29 25.4	21.04	13	7 5 16.90	25 41 21.9	70.33
14	6 1 19.27	27 27 19.2	23.16	14	7 8 1.37	25 34 19.9	72.26
15	6 4 7.29	27 25 0.2	25.27	15	7 10 45.56	25 27 6.3	74.17
16	6 6 55.29	27 22 28.6	27.38	16	7 13 29.44	25 19 41.2	76.07
17	6 9 43.26	27 19 44.2	29.50	17	7 16 13.01	25 12 4.8	77.96
18	6 12 31.19	27 16 47.2	31.61	18	7 18 56.27	25 4 17.0	79.83
19	6 15 19.06	27 13 37.6	33.71	19	7 21 39.20	24 56 18.0	81.68
20	6 18 6.87	27 10 15.3	35.81	20	7 24 21.79	24 48 7.9	83.52
21	6 20 54.59	27 6 40.4	37.90	21	7 27 4.03	24 39 46.7	85.34
22	6 23 42.22	27 2 52.9	40.00	22	7 29 45.93	24 31 14.6	87.15
23	6 26 29.75	26 58 52.9	42.08	23	7 32 27.47	24 22 31.7	88.94
24	6 29 17.15	N.26 54 40.4		24	7 35 8.64	N.24 13 38.0	

PHASES OF THE MOON.

		d	h	m
☾	First Quarter	-	7	10 47.5
○	Full Moon	-	14	22 17.8
☾	Last Quarter	-	23	2 31.9
●	New Moon	-	30	2 40.7

		d	h
☾	Perigee	-	3 0
☾	Apogee	-	18 17

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
3	SUN W.	30 27 5	2457	32 9 19	2454	33 51 37	2451	35 33 59	2450
	Regulus E.	45 18 32	2109	43 27 46	2111	41 37 3	2113	39 46 23	2115
	Spica E.	99 21 30	2111	97 30 48	2113	95 40 8	2115	93 49 32	2117
4	SUN W.	44 5 48	2458	45 48 1	2462	47 30 7	2466	49 12 8	2472
	Regulus E.	30 34 18	2136	28 44 14	2141	26 54 18	2147	25 4 31	2155
	Spica E.	84 37 41	2137	82 47 38	2143	80 57 44	2149	79 7 59	2155
5	SUN W.	57 40 3	2506	59 21 8	2514	61 2 2	2522	62 42 44	2532
	Pollux W.	21 21 39	2264	23 8 32	2261	24 55 29	2262	26 42 25	2264
	Spica E.	70 1 46	2192	68 13 6	2200	66 24 38	2209	64 36 24	2218
	Antares E.	115 53 30	2188	114 4 44	2196	112 16 10	2205	110 27 50	2214
6	SUN W.	71 3 0	2580	72 42 22	2591	74 21 29	2601	76 0 22	2612
	Pollux W.	35 35 40	2292	37 21 52	2300	39 7 52	2308	40 53 40	2316
	Saturn W.	17 49 32	2292	19 35 44	2301	21 21 42	2311	23 7 25	2322
	Spica E.	55 38 42	2267	53 51 53	2278	52 5 21	2287	50 19 3	2298
	Antares E.	101 29 33	2262	99 42 37	2272	97 55 56	2282	96 9 30	2293
7	SUN W.	84 11 0	2669	85 48 22	2681	87 25 27	2692	89 2 18	2704
	Pollux W.	49 39 23	2364	51 23 50	2374	53 8 2	2384	54 51 59	2394
	Saturn W.	31 52 8	2375	33 36 18	2387	35 20 11	2398	37 3 49	2409
	Regulus W.	12 37 24	2356	14 22 2	2365	16 6 27	2375	17 50 38	2384
	Spica E.	41 31 36	2354	39 46 55	2366	38 2 32	2378	36 18 25	2390
	Antares E.	87 21 13	2346	85 36 20	2357	83 51 44	2368	82 7 23	2380
8	SUN W.	97 2 32	2763	98 37 48	2775	100 12 49	2787	101 47 34	2799
	Pollux W.	63 28 1	2447	65 10 29	2458	66 52 41	2469	68 34 38	2479
	Saturn W.	45 37 59	2465	47 20 2	2476	49 1 49	2487	50 43 21	2498
	Regulus W.	26 27 55	2437	28 10 37	2448	29 53 4	2458	31 35 16	2469
	Spica E.	27 42 11	2453	25 59 51	2465	24 17 48	2479	22 36 5	2493
	Antares E.	73 29 38	2435	71 46 53	2446	70 4 23	2456	68 22 8	2467
	α Aquilæ E.	122 1 4	3429	120 39 20	3404	119 17 8	3384	117 54 33	3366
9	SUN W.	109 37 24	2858	111 10 37	2870	112 43 35	2881	114 16 18	2892
	Pollux W.	77 0 41	2532	78 41 10	2543	80 21 24	2553	82 1 23	2564
	Saturn W.	59 7 8	2552	60 47 9	2563	62 26 55	2574	64 6 26	2585
	Regulus W.	40 2 29	2522	41 43 12	2533	43 23 39	2543	45 3 52	2553
	Antares E.	59 54 44	2521	58 14 0	2532	56 33 31	2542	54 53 17	2552
	α Aquilæ E.	110 57 21	3309	109 33 20	3303	108 9 12	3299	106 44 59	3297
10	SUN W.	121 56 14	2950	123 27 30	2961	124 58 32	2972	126 29 20	2983
	Pollux W.	90 17 49	2614	91 56 25	2624	93 34 48	2634	95 12 57	2644
	Saturn W.	72 20 27	2636	73 58 33	2646	75 36 26	2655	77 14 6	2666
	Regulus W.	53 21 25	2604	55 0 15	2614	56 38 51	2624	58 17 14	2634
	Antares E.	46 35 37	2604	44 56 47	2613	43 18 10	2623	41 39 47	2633
	α Aquilæ E.	99 43 36	3300	98 19 25	3304	96 55 18	3309	95 31 17	3315
	Fomalhaut E.	125 30 41	3102	124 2 34	3093	122 34 16	3086	121 5 49	3080
11	Pollux W.	103 20 25	2691	104 57 17	2701	106 33 55	2710	108 10 22	2719
	Saturn W.	85 19 8	2713	86 55 30	2722	88 31 40	2731	90 7 38	2741
	Regulus W.	66 25 52	2681	68 2 57	2689	69 39 51	2699	71 16 32	2708
	Spica W.	12 34 29	2747	14 10 6	2744	15 45 48	2743	17 21 31	2744
	Antares E.	33 31 5	2680	31 53 59	2689	30 17 5	2699	28 40 24	2708

MEAN TIME.

LUNAR DISTANCES.

Day of the Month	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
3	SUN W.	37 16 23	2449	38 58 48	2450	40 41 11	2453	42 23 31	2455
	Regulus E.	37 55 47	2118	36 5 16	2122	34 14 50	2126	32 24 30	2131
	Spica E.	91 58 59	2120	90 8 30	2124	88 18 7	2128	86 27 51	2132
4	SUN W.	50 54 0	2477	52 35 45	2484	54 17 21	2491	55 58 47	2498
	Regulus E.	23 14 55	2161	21 25 29	2169	19 36 15	2178	17 47 14	2186
	Spica E.	77 18 23	2161	75 28 57	2168	73 39 42	2176	71 50 38	2184
5	SUN W.	64 23 13	2540	66 3 30	2550	67 43 34	2560	69 23 24	2570
	Pollux W.	28 29 18	2367	30 16 6	2372	32 2 46	2378	33 49 18	2385
	Spica E.	62 48 23	2227	61 0 36	2237	59 13 3	2247	57 25 45	2257
	Antares E.	108 39 43	2223	106 51 49	2232	105 4 9	2242	103 16 44	2252
6	SUN W.	77 39 1	2624	79 17 23	2635	80 55 31	2646	82 33 24	2658
	Pollux W.	42 39 16	2326	44 24 38	2335	46 9 47	2344	47 54 43	2355
	Saturn W.	24 52 53	2333	26 38 5	2343	28 23 2	2354	30 7 43	2365
	Spica E.	48 33 1	2309	46 47 15	2321	45 1 46	2331	43 16 32	2343
	Antares E.	94 23 20	2303	92 37 25	2313	90 51 45	2324	89 6 21	2335
7	SUN W.	90 38 52	2716	92 15 10	2728	93 51 13	2740	95 27 0	2751
	Pollux W.	56 35 42	2405	58 19 9	2415	60 2 22	2426	61 45 19	2437
	Saturn W.	38 47 11	2420	40 30 17	2431	42 13 7	2443	43 55 41	2454
	Regulus W.	19 34 35	2394	21 18 18	2405	23 1 45	2415	24 44 58	2426
	Spica E.	34 34 36	2401	32 51 3	2414	31 7 48	2426	29 24 51	2439
	Antares E.	80 23 19	2390	78 39 30	2401	76 55 57	2412	75 12 40	2423
8	SUN W.	103 22 3	2811	104 56 17	2824	106 30 14	2835	108 3 57	2847
	Pollux W.	70 16 21	2490	71 57 48	2501	73 39 0	2511	75 19 58	2522
	Saturn W.	52 24 37	2509	54 5 37	2520	55 46 23	2531	57 26 53	2542
	Regulus W.	33 17 13	2480	34 58 54	2490	36 40 21	2502	38 21 32	2512
	Spica E.	20 54 42	2509	19 13 41	2525	17 33 3	2543	15 52 50	2564
	Antares E.	66 40 9	2478	64 58 25	2489	63 16 56	2500	61 35 43	2510
	α Aquila E.	116 31 37	3351	115 8 24	3337	113 44 55	3326	112 21 13	3317
9	SUN W.	115 48 47	2905	117 21 0	2916	118 52 59	2927	120 24 44	2938
	Pollux W.	83 41 8	2573	85 20 40	2584	86 59 57	2594	88 39 0	2604
	Saturn W.	65 45 42	2594	67 24 45	2605	69 3 33	2615	70 42 7	2626
	Regulus W.	46 43 51	2564	48 23 36	2574	50 3 6	2584	51 42 23	2595
	Antares E.	53 13 16	2563	51 33 31	2573	49 53 59	2583	48 14 41	2593
	α Aquila E.	105 20 44	3395	103 56 26	3394	102 32 8	3395	101 7 51	3397
10	SUN W.	127 59 54	2994	129 30 14	3006	131 0 19	3016	132 30 12	3028
	Pollux W.	96 50 52	2653	98 28 35	2663	100 6 5	2673	101 43 21	2682
	Saturn W.	78 51 32	2675	80 28 46	2685	82 5 46	2695	83 42 33	2704
	Regulus W.	59 55 23	2643	61 33 20	2653	63 11 3	2662	64 48 34	2672
	Antares E.	40 1 37	2643	38 23 40	2652	36 45 56	2661	35 8 24	2671
	α Aquila E.	94 7 23	3322	92 43 37	3329	91 19 59	3338	89 56 32	3347
	Fomalhaut E.	119 37 15	3076	118 8 36	3072	116 39 52	3069	115 11 5	3068
11	Pollux W.	109 46 36	2729	111 22 37	2738	112 58 27	2747	114 34 5	2756
	Saturn W.	91 43 23	2750	93 18 57	2759	94 54 18	2767	96 29 29	2777
	Regulus W.	72 53 1	2717	74 29 19	2726	76 5 24	2735	77 41 18	2744
	Spica W.	18 57 12	2747	20 32 49	2752	22 8 20	2758	23 43 43	2763
	Antares E.	27 3 54	2717	25 27 36	2726	23 51 31	2734	22 15 36	2744

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.	
11	α Aquilæ E.	88 33 15	3358	87 10 10	3368	85 47 17	3380	84 24 38	3393	
	Fomalhaut E.	113 42 17	3068	112 13 28	3068	110 44 39	3069	109 15 52	3071	
12	Pollux W.	116 9 30	2765	117 44 44	2774	119 19 46	2783	120 54 36	2792	
	Saturn W.	98 4 27	2785	99 39 14	2795	101 13 49	2803	102 48 13	2811	
	Regulus W.	79 17 0	2752	80 52 31	2760	82 27 51	2769	84 2 59	2778	
	Spica W.	25 18 59	2770	26 54 6	2776	28 29 5	2784	30 3 54	2791	
	α Aquilæ E.	77 35 21	3471	76 14 24	3489	74 53 47	3508	73 33 32	3529	
	Fomalhaut E.	101 52 46	3089	100 24 23	3095	98 56 7	3100	97 27 58	3106	
	α Pegasi E.	124 6 29	3031	122 36 55	3030	121 7 20	3030	119 37 44	3030	
13	Saturn W.	110 37 30	2853	112 10 49	2861	113 43 58	2869	115 16 56	2877	
	Regulus W.	91 55 57	2818	93 30 1	2827	95 3 54	2835	96 37 37	2843	
	Spica W.	37 55 40	2827	39 29 33	2835	41 3 15	2842	42 36 49	2850	
	α Aquilæ E.	66 58 23	3651	65 40 43	3680	64 23 35	3710	63 6 59	3743	
	Fomalhaut E.	90 9 13	3143	88 41 56	3151	87 14 48	3160	85 47 51	3170	
	α Pegasi E.	112 10 4	3040	110 40 41	3043	109 11 22	3047	107 42 8	3051	
14	Regulus W.	104 23 40	2881	105 56 23	2889	107 28 56	2896	109 1 20	2903	
	Spica W.	50 22 11	2886	51 54 48	2894	53 27 15	2901	54 59 32	2908	
	α Aquilæ E.	56 53 12	3939	55 40 32	3987	54 28 40	4037	53 17 37	4092	
	Fomalhaut E.	78 36 4	3222	77 10 21	3234	75 44 52	3246	74 19 37	3259	
	α Pegasi E.	100 17 22	3077	98 48 44	3082	97 20 13	3088	95 51 49	3095	
15	Regulus W.	116 41 2	2939	118 12 32	2946	119 43 53	2953	121 15 5	2959	
	Spica W.	62 38 47	2943	64 10 12	2950	65 41 28	2956	67 12 36	2962	
	Antares W.	16 44 47	2939	18 16 17	2946	19 47 37	2952	21 18 50	2958	
	α Aquilæ E.	47 36 49	4433	46 31 57	4519	45 28 22	4612	44 26 8	4713	
	Fomalhaut E.	67 17 20	3331	65 53 44	3347	64 30 27	3365	63 7 30	3382	
	α Pegasi E.	88 31 50	3128	87 4 15	3136	85 36 49	3144	84 9 32	3152	
16	Spica W.	74 46 16	2993	76 16 37	2999	77 46 51	3005	79 16 58	3010	
	Antares W.	28 52 54	2990	30 23 19	2995	31 53 38	3001	33 23 49	3007	
	Fomalhaut E.	56 18 10	3487	54 57 31	3512	53 37 20	3538	52 17 38	3566	
	α Pegasi E.	76 55 28	3192	75 29 9	3200	74 3 0	3209	72 37 1	3217	
	α Arietis E.	119 7 8	3011	117 37 9	3017	116 7 17	3022	114 37 32	3026	
17	Spica W.	86 45 54	3035	88 15 23	3040	89 44 46	3044	91 14 4	3048	
	Antares W.	40 53 7	3032	42 22 40	3036	43 52 8	3040	45 21 31	3044	
	Fomalhaut E.	45 47 25	3738	44 31 18	3782	43 15 57	3828	42 1 24	3880	
	α Pegasi E.	65 29 49	3265	64 4 57	3276	62 40 18	3287	61 15 51	3298	
	α Arietis E.	107 10 13	3050	105 41 2	3054	104 11 56	3059	102 42 56	3062	
18	Spica W.	98 39 27	3065	100 8 20	3068	101 37 9	3069	103 5 56	3071	
	Antares W.	52 47 16	3061	54 16 13	3064	55 45 7	3065	57 13 59	3068	
	Fomalhaut E.	36 3 19	4224	34 55 16	4318	33 48 40	4422	32 43 38	4540	
	α Pegasi E.	54 16 59	3360	52 53 57	3375	51 31 12	3390	50 8 44	3407	
	α Arietis E.	95 18 56	3078	93 50 19	3081	92 21 46	3082	90 53 14	3085	
	Venus E.	119 4 23	3565	117 45 10	3566	116 25 59	3568	115 6 50	3569	
19	Spica W.	110 29 21	3078	111 57 58	3078	113 26 35	3077	114 55 13	3077	
	Antares W.	64 37 49	3073	66 6 31	3073	67 35 14	3073	69 3 57	3072	
	α Pegasi E.	43 21 28	3507	42 1 12	3533	40 41 24	3561	39 22 7	3593	
	α Arietis E.	83 31 7	3090	82 2 45	3091	80 34 24	3090	79 6 2	3089	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
11	<i>α</i> Aquilæ E.	83 2 14	3407	81 40 5	3421	80 18 13	3436	78 56 37	3453
	Fomalhaut E.	107 47 7	3074	106 18 25	3077	104 49 48	3080	103 21 14	3085
12	Pollux W.	122 29 14	2801	124 3 41	2810	125 37 56	2818	127 12 0	2828
	Saturn W.	104 22 26	2819	105 56 29	2828	107 30 20	2837	109 4 0	2845
	Regulus W.	85 37 56	2786	87 12 43	2795	88 47 18	2802	90 21 43	2811
	Spica W.	31 38 34	2798	33 13 5	2805	34 47 26	2812	36 21 38	2820
	<i>α</i> Aquilæ E.	72 13 40	3550	70 54 11	3574	69 35 8	3598	68 16 31	3624
	Fomalhaut E.	95 59 56	3113	94 32 2	3120	93 4 17	3128	91 36 41	3135
	<i>α</i> Pegasi E.	118 8 8	3031	116 38 33	3033	115 9 1	3035	113 39 31	3037
13	Saturn W.	116 49 44	2885	118 22 22	2893	119 54 50	2901	121 27 8	2909
	Regulus W.	98 11 9	2850	99 44 32	2858	101 17 45	2866	102 50 47	2873
	Spica W.	44 10 12	2857	45 43 26	2864	47 16 31	2872	48 49 26	2880
	<i>α</i> Aquilæ E.	61 50 58	3777	60 35 32	3814	59 20 44	3853	58 6 37	3895
	Fomalhaut E.	84 21 6	3179	82 54 32	3189	81 28 10	3199	80 2 0	3211
	<i>α</i> Pegasi E.	106 12 59	3056	104 43 56	3061	103 14 58	3066	101 46 7	3071
14	Regulus W.	110 33 35	2911	112 5 40	2917	113 37 37	2925	115 9 24	2932
	Spica W.	56 31 41	2915	58 3 41	2922	59 35 32	2929	61 7 14	2936
	<i>α</i> Aquilæ E.	52 7 28	4151	50 58 15	4214	49 50 2	4281	48 42 52	4354
	Fomalhaut E.	72 54 37	3272	71 29 53	3286	70 5 25	3300	68 41 14	3315
	<i>α</i> Pegasi E.	94 23 34	3101	92 55 26	3108	91 27 26	3114	89 59 34	3121
15	Regulus W.	122 46 9	2965	124 17 5	2972	125 47 53	2978	127 18 33	2985
	Spica W.	68 43 36	2969	70 14 28	2975	71 45 12	2981	73 15 48	2988
	Antares W.	22 49 55	2965	24 20 51	2971	25 51 40	2977	27 22 21	2984
	<i>α</i> Aquilæ E.	43 25 19	4824	42 26 2	4945	41 28 23	5076	40 32 27	5221
	Fomalhaut E.	61 44 53	3401	60 22 37	3421	59 0 44	3442	57 39 15	3464
	<i>α</i> Pegasi E.	82 42 25	3159	81 15 26	3167	79 48 37	3175	78 21 58	3183
16	Spica W.	80 46 58	3016	82 16 51	3021	83 46 38	3026	85 16 19	3031
	Antares W.	34 53 53	3012	36 23 51	3017	37 53 42	3022	39 23 27	3026
	Fomalhaut E.	50 58 26	3596	49 39 47	3627	48 21 42	3661	47 4 14	3698
	<i>α</i> Pegasi E.	71 11 12	3227	69 45 35	3236	68 20 8	3246	66 54 53	3255
	<i>α</i> Arietis E.	113 7 52	3032	111 38 19	3036	110 8 51	3041	108 39 29	3046
17	Spica W.	92 43 18	3052	94 12 26	3055	95 41 31	3059	97 10 31	3062
	Antares W.	46 50 49	3048	48 20 2	3052	49 49 10	3055	51 18 15	3058
	Fomalhaut E.	40 47 44	3935	39 35 0	3997	38 23 18	4065	37 12 42	4140
	<i>α</i> Pegasi E.	59 51 37	3309	58 27 36	3321	57 3 49	3333	55 40 16	3347
	<i>α</i> Arietis E.	101 13 59	3066	99 45 8	3069	98 16 20	3072	96 47 36	3075
18	Spica W.	104 34 41	3074	106 3 23	3075	107 32 3	3075	109 0 43	3077
	Antares W.	58 42 48	3069	60 11 36	3071	61 40 21	3072	63 9 5	3072
	Fomalhaut E.	31 40 21	4673	30 38 59	4825	29 39 43	4998	28 42 46	5197
	<i>α</i> Pegasi E.	48 46 35	3424	47 24 45	3442	46 3 16	3462	44 42 10	3484
	<i>α</i> Arietis E.	89 24 46	3086	87 56 19	3087	86 27 54	3088	84 59 30	3089
	Venus E.	113 47 42	3570	112 28 35	3572	111 9 30	3572	109 50 25	3572
19	Spica W.	116 23 51	3076	117 52 30	3074	119 21 11	3073	120 49 53	3071
	Antares W.	70 32 41	3071	72 1 26	3070	73 30 12	3068	74 59 1	3066
	<i>α</i> Pegasi E.	38 3 25	3627	36 45 20	3665	35 27 56	3708	34 11 18	3758
	<i>α</i> Arietis E.	77 37 39	3088	76 9 15	3088	74 40 51	3086	73 12 24	3084

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
19	Venus E.	108 31 20	3572	107 12 15	3572	105 53 10	3571	104 34 4	3570
	SUN E.	135 11 26	3462	133 50 20	3461	132 29 12	3460	131 8 3	3458
20	Antares W.	76 27 52	3064	77 56 46	3061	79 25 44	3057	80 54 46	3054
	α Pegasi E.	32 55 32	3814	31 40 44	3876	30 27 0	3948	29 14 28	4032
	α Arietis E.	71 43 55	3082	70 15 24	3079	68 46 49	3077	67 18 11	3074
	Venus E.	97 58 7	3559	96 38 48	3555	95 19 25	3551	93 59 57	3547
	SUN E.	124 21 44	3445	123 0 18	3442	121 38 49	3438	120 17 15	3433
21	Antares W.	88 21 11	3029	89 50 48	3024	91 20 31	3017	92 50 23	3010
	α Aquilæ W.	44 25 43	4690	45 26 51	4600	46 29 16	4515	47 32 55	4437
	α Arietis E.	59 53 53	3052	58 24 45	3046	56 55 29	3041	55 26 7	3035
	Venus E.	87 21 21	3520	86 1 19	3513	84 41 9	3506	83 20 51	3498
	SUN E.	113 27 59	3404	112 5 47	3398	110 43 28	3390	109 21 0	3382
22	Antares W.	100 22 4	2968	101 52 57	2959	103 24 1	2949	104 55 18	2938
	α Aquilæ W.	53 7 21	4116	54 17 7	4064	55 27 44	4014	56 39 10	3966
	Fomalhaut W.	28 15 19	4988	29 12 24	4789	30 12 9	4615	31 14 21	4463
	α Arietis E.	47 57 14	2999	46 27 0	2992	44 56 37	2983	43 26 3	2974
	Venus E.	76 37 1	3453	75 15 44	3442	73 54 15	3431	72 32 34	3420
	SUN E.	102 26 15	3336	101 2 45	3325	99 39 3	3314	98 15 8	3303
23	Antares W.	112 35 11	2880	114 7 56	2867	115 40 57	2854	117 14 15	2841
	α Aquilæ W.	62 47 30	3761	64 3 13	3725	65 19 33	3691	66 36 30	3658
	Fomalhaut W.	36 55 25	3907	38 8 38	3825	39 23 15	3750	40 39 9	3681
	α Arietis E.	35 50 30	2931	34 18 50	2922	32 46 59	2913	31 14 57	2905
	Venus E.	65 40 46	3358	64 17 41	3344	62 54 20	3330	61 30 43	3315
	SUN E.	91 12 4	3239	89 46 41	3225	88 21 2	3210	86 55 5	3196
24	α Aquilæ W.	73 9 47	3508	74 30 2	3480	75 50 48	3454	77 12 3	3429
	Fomalhaut W.	47 15 32	3402	48 37 47	3356	50 0 54	3313	51 24 51	3271
	α Pegasi W.	25 46 43	3958	26 59 4	3817	28 13 49	3695	29 30 41	3588
	α Arietis E.	23 32 34	2880	21 59 49	2881	20 27 5	2886	18 54 29	2896
	Venus E.	54 28 19	3238	53 2 55	3223	51 37 13	3206	50 11 11	3190
	SUN E.	79 40 48	3116	78 12 58	3100	76 44 48	3082	75 16 16	3065
25	α Aquilæ W.	84 5 13	3313	85 29 9	3292	86 53 30	3273	88 18 13	3253
	Fomalhaut W.	58 36 11	3088	60 4 35	3056	61 33 39	3025	63 3 21	2994
	α Pegasi W.	36 20 39	3199	37 46 50	3141	39 14 10	3087	40 42 36	3037
	Venus E.	42 56 5	3106	41 28 3	3090	39 59 41	3073	38 30 59	3057
	SUN E.	67 48 7	2973	66 17 20	2954	64 46 9	2935	63 14 34	2916
26	α Aquilæ W.	95 27 11	3170	96 53 56	3157	98 20 57	3145	99 48 12	3133
	Fomalhaut W.	70 41 3	2856	72 14 19	2830	73 48 8	2805	75 22 29	2782
	α Pegasi W.	48 19 0	2830	49 52 49	2795	51 27 24	2762	53 2 42	2729
	Venus E.	31 2 44	2986	29 32 13	2974	28 1 28	2964	26 30 30	2957
	SUN E.	55 30 31	2818	53 56 27	2799	52 21 58	2780	50 47 4	2761
27	α Aquilæ W.	107 7 23	3099	108 35 34	3097	110 3 48	3097	111 32 2	3099
	Fomalhaut W.	83 21 45	2673	84 59 1	2654	86 36 43	2635	88 14 50	2618
	α Pegasi W.	61 9 25	2587	62 48 38	2562	64 28 25	2538	66 8 46	2514
	SUN E.	42 46 16	2667	41 8 52	2649	39 31 4	2632	37 52 53	2615

MEAN TIME.

LUNAR DISTANCES.

Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^a .	P.L. of diff.	XXI ^a .	P.L. of diff.
19 Venus E.	103 14 57	3568	101 55 48	3566	100 36 37	3564	99 17 23	3562
Sun E.	129 46 52	3457	128 25 40	3454	127 4 24	3452	125 43 6	3448
20 Antares W.	82 23 52	3050	83 53 3	3046	85 22 19	3040	86 51 42	3035
α Pegasi E.	28 3 20	4129	26 53 46	4242	25 45 59	4375	24 40 15	4533
α Arietis E.	65 49 29	3070	64 20 43	3066	62 51 52	3061	61 22 55	3057
Venus E.	92 40 25	3543	91 20 48	3537	90 1 5	3532	88 41 16	3526
Sun E.	118 55 36	3428	117 33 51	3422	116 12 0	3417	114 50 3	3411
21 Antares W.	94 20 24	3002	95 50 34	2995	97 20 53	2986	98 51 23	2977
α Aquilæ W.	48 37 43	4364	49 43 37	4296	50 50 33	4232	51 58 29	4172
α Arietis E.	53 56 37	3029	52 27 0	3022	50 57 14	3014	49 27 19	3006
Venus E.	82 0 24	3489	80 39 48	3481	79 19 3	3472	77 58 7	3463
Sun E.	107 58 23	3374	106 35 37	3365	105 12 40	3355	103 49 33	3346
22 Antares W.	106 26 48	2927	107 58 32	2916	109 30 30	2905	111 2 43	2893
α Aquilæ W.	57 51 23	3921	59 4 21	3878	60 18 3	3838	61 32 26	3799
Fomalhaut W.	32 18 46	4327	33 25 14	4204	34 33 36	4095	35 43 42	3997
α Arietis E.	41 55 18	2966	40 24 23	2957	38 53 17	2948	37 21 59	2939
Venus E.	71 10 40	3408	69 48 33	3396	68 26 12	3383	67 3 36	3371
Sun E.	96 51 0	3291	95 26 38	3279	94 2 2	3266	92 37 11	3253
23 Antares W.	118 47 50	2826	120 21 44	2812	121 55 56	2798	123 30 27	2782
α Aquilæ W.	67 54 2	3626	69 12 9	3595	70 30 49	3565	71 50 2	3536
Fomalhaut W.	41 56 16	3617	43 14 32	3558	44 33 52	3503	45 54 13	3451
α Arietis E.	29 42 45	2898	28 10 23	2891	26 37 53	2886	25 5 16	2882
Venus E.	60 6 49	3301	58 42 38	3286	57 18 10	3270	55 53 23	3255
Sun E.	85 28 51	3181	84 2 19	3165	82 35 28	3149	81 8 18	3133
24 α Aquilæ W.	78 33 47	3405	79 55 58	3381	81 18 37	3358	82 41 42	3335
Fomalhaut W.	52 49 37	3231	54 15 9	3193	55 41 27	3157	57 8 27	3121
α Pegasi W.	30 49 28	3493	32 10 0	3408	33 32 8	3331	34 55 43	3262
α Arietis E.	17 22 5	2914	15 50 4	2945	14 18 43	2993	12 48 21	3068
Venus E.	48 44 50	3173	47 18 9	3157	45 51 8	3140	44 23 46	3124
Sun E.	73 47 23	3047	72 18 8	3028	70 48 30	3010	69 18 30	2992
25 α Aquilæ W.	89 43 20	3235	91 8 47	3217	92 34 36	3201	94 0 44	3185
Fomalhaut W.	64 33 42	2965	66 4 39	2936	67 36 12	2908	69 8 21	2882
α Pegasi W.	42 12 3	2991	43 42 27	2947	45 13 47	2906	46 45 58	2867
Venus E.	37 1 57	3042	35 32 36	3026	34 2 56	3012	32 32 58	2999
Sun E.	61 42 36	2896	60 10 12	2877	58 37 23	2858	57 4 10	2838
26 α Aquilæ W.	101 15 42	3123	102 43 23	3114	104 11 15	3107	105 39 16	3102
Fomalhaut W.	76 57 21	2759	78 32 43	2736	80 8 35	2714	81 44 56	2693
α Pegasi W.	54 38 44	2698	56 15 26	2669	57 52 48	2641	59 30 48	2613
Venus E.	24 59 23	2952	23 28 10	2950	21 56 54	2953	20 25 42	2961
Sun E.	49 11 45	2741	47 36 0	2722	45 59 50	2704	44 23 15	2686
27 α Aquilæ W.	113 0 13	3104	114 28 18	3111	115 56 14	3121	117 23 58	3134
Fomalhaut W.	89 53 21	2601	91 32 15	2584	93 11 32	2569	94 51 9	2556
α Pegasi W.	67 49 40	2491	69 31 6	2470	71 13 1	2449	72 55 26	2429
Sun E.	36 14 19	2599	34 35 23	2583	32 56 5	2569	31 16 27	2554

CONFIGURATIONS OF THE SATELLITES OF JUPITER.

**The SATELLITES of JUPITER are not visible this Month,
JUPITER being too near to the SUN.**

Day of the Month.	For correcting the Places of the Fixed Stars. At Mean Midnight,				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h .449625. Days.	From Mean Noon of January 1.	
	Logarithm of						Day of the Year.	Fraction of the Year.*
	A	B	C	D				
1	0 ^h .7879	1 ^h .2860	+9 ^h .7766	0 ^h .8457	19 19 3 ^m .80	70	151	.4134
2	0 ^h .7664	1 ^h .2885	9 ^h .7793	0 ^h .8447	19 15 7 ^m .89	71	152	.4162
3	0 ^h .7436	1 ^h .2908	9 ^h .7819	0 ^h .8437	19 11 11 ^m .98	72	153	.4189
4	0 ^h .7194	1 ^h .2929	+9 ^h .7846	0 ^h .8428	19 7 16 ^m .06	73	154	.4216
5	0 ^h .6937	1 ^h .2959	9 ^h .7872	0 ^h .8419	19 3 20 ^m .15	74	155	.4244
6	0 ^h .6662	1 ^h .2969	9 ^h .7899	0 ^h .8410	18 59 24 ^m .24	75	156	.4271
7	0 ^h .6368	1 ^h .2987	+9 ^h .7925	0 ^h .8402	18 55 28 ^m .33	76	157	.4299
8	0 ^h .6051	1 ^h .3003	9 ^h .7951	0 ^h .8393	18 51 32 ^m .41	77	158	.4326
9	0 ^h .5707	1 ^h .3019	9 ^h .7977	0 ^h .8386	18 47 36 ^m .50	78	159	.4353
10	0 ^h .5333	1 ^h .3033	+9 ^h .8003	0 ^h .8378	18 43 40 ^m .59	79	160	.4381
11	0 ^h .4923	1 ^h .3046	9 ^h .8029	0 ^h .8371	18 39 44 ^m .68	80	161	.4408
12	0 ^h .4468	1 ^h .3057	9 ^h .8054	0 ^h .8365	18 35 48 ^m .76	81	162	.4435
13	0 ^h .3959	1 ^h .3067	+9 ^h .8080	0 ^h .8358	18 31 52 ^m .85	82	163	.4463
14	0 ^h .3382	1 ^h .3076	9 ^h .8106	0 ^h .8352	18 27 56 ^m .94	83	164	.4490
15	0 ^h .2714	1 ^h .3084	9 ^h .8131	0 ^h .8347	18 24 1 ^m .03	84	165	.4518
16	0 ^h .1923	1 ^h .3091	+9 ^h .8157	0 ^h .8341	18 20 5 ^m .11	85	166	.4545
17	0 ^h .0953	1 ^h .3096	9 ^h .8182	0 ^h .8336	18 16 9 ^m .20	86	167	.4572
18	9 ^h .9702	1 ^h .3101	9 ^h .8207	0 ^h .8332	18 12 13 ^m .29	87	168	.4600
19	9 ^h .7936	1 ^h .3104	+9 ^h .8233	0 ^h .8328	18 8 17 ^m .37	88	169	.4627
20	9 ^h .4908	1 ^h .3105	9 ^h .8258	0 ^h .8324	18 4 21 ^m .46	89	170	.4654
21	+7 ^h .4211	1 ^h .3106	9 ^h .8282	0 ^h .8321	18 0 25 ^m .55	90	171	.4682
22	+9 ^h .4980	1 ^h .3105	+9 ^h .8306	0 ^h .8318	17 56 29 ^m .64	91	172	.4709
23	9 ^h .7972	1 ^h .3104	9 ^h .8331	0 ^h .8315	17 52 33 ^m .72	92	173	.4737
24	9 ^h .9726	1 ^h .3101	9 ^h .8355	0 ^h .8313	17 48 37 ^m .81	93	174	.4764
25	+0 ^h .0971	1 ^h .3096	+9 ^h .8379	0 ^h .8311	17 44 41 ^m .90	94	175	.4791
26	0 ^h .1936	1 ^h .3091	9 ^h .8403	0 ^h .8310	17 40 45 ^m .99	95	176	.4819
27	0 ^h .2725	1 ^h .3084	9 ^h .8427	0 ^h .8309	17 36 50 ^m .07	96	177	.4846
28	+0 ^h .3391	1 ^h .3076	+9 ^h .8451	0 ^h .8308	17 32 54 ^m .16	97	178	.4873
29	0 ^h .3967	1 ^h .3067	9 ^h .8475	0 ^h .8308	17 28 58 ^m .25	98	179	.4901
30	0 ^h .4475	1 ^h .3057	9 ^h .8498	0 ^h .8308	17 25 2 ^m .33	99	180	.4928
31	+0 ^h .4928	1 ^h .3045	+9 ^h .8521	0 ^h .8308	17 21 6 ^m .42	100	181	.4956

* Add .0017 if Fraction be required for the time 4, see page 363.

* Add .0017 if Fraction be required for the time 4, see page 363.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Frid.	1	6 39 27.99	10.344	N.23 8 57.8	10.27	I 8.78	3 24.88	0.486
Sat.	2	6 43 36.25	10.333	23 4 51.3	11.28	I 8.75	3 36.55	0.475
Sun.	3	6 47 44.23	10.320	23 0 20.6	12.28	I 8.71	3 47.94	0.462
Mon.	4	6 51 51.91	10.306	22 55 25.8	13.28	I 8.67	3 59.02	0.448
Tues.	5	6 55 59.26	10.292	22 50 7.0	14.28	I 8.62	4 9.79	0.434
Wed.	6	7 0 6.27	10.276	22 44 24.4	15.26	I 8.58	4 20.21	0.419
Thur.	7	7 4 12.90	10.260	22 38 18.2	16.24	I 8.53	4 30.26	0.402
Frid.	8	7 8 19.14	10.243	22 31 48.5	17.21	I 8.48	4 39.92	0.385
Sat.	9	7 12 24.98	10.226	22 24 55.5	18.18	I 8.42	4 49.17	0.368
Sun.	10	7 16 30.40	10.208	22 17 39.3	19.13	I 8.36	4 58.01	0.350
Mon.	11	7 20 35.38	10.189	22 10 0.0	20.08	I 8.30	5 6.41	0.331
Tues.	12	7 24 39.91	10.170	22 1 58.0	21.02	I 8.24	5 14.26	0.312
Wed.	13	7 28 43.98	10.150	21 53 33.4	21.96	I 8.18	5 21.85	0.292
Thur.	14	7 32 47.57	10.130	21 44 46.3	22.89	I 8.11	5 28.85	0.272
Frid.	15	7 36 50.67	10.109	21 35 37.0	23.81	I 8.04	5 35.38	0.252
Sat.	16	7 40 53.28	10.088	21 26 5.6	24.72	I 7.97	5 41.43	0.231
Sun.	17	7 44 55.39	10.066	21 16 12.3	25.62	I 7.90	5 46.96	0.209
Mon.	18	7 48 56.98	10.045	21 5 57.4	26.51	I 7.83	5 51.98	0.188
Tues.	19	7 52 58.06	10.023	20 55 20.9	27.40	I 7.75	5 56.49	0.166
Wed.	20	7 56 58.62	10.000	20 44 23.2	28.28	I 7.67	6 0.47	0.144
Thur.	21	8 0 58.64	9.978	20 33 4.5	29.15	I 7.59	6 3.93	0.121
Frid.	22	8 4 58.11	9.955	20 21 25.0	30.00	I 7.51	6 6.84	0.098
Sat.	23	8 8 57.04	9.932	20 9 25.0	30.85	I 7.43	6 9.20	0.075
Sun.	24	8 12 55.40	9.909	19 57 4.6	31.68	I 7.35	6 11.00	0.051
Mon.	25	8 16 53.21	9.885	19 44 24.2	32.51	I 7.26	6 12.25	0.028
Tues.	26	8 20 50.44	9.861	19 31 23.9	33.32	I 7.18	6 12.92	0.004
Wed.	27	8 24 47.09	9.836	19 18 4.1	34.13	I 7.09	6 13.01	0.020
Thur.	28	8 28 43.15	9.811	19 4 25.1	34.92	I 7.01	6 12.52	0.045
Frid.	29	8 32 38.62	9.786	18 50 27.2	35.69	I 6.92	6 11.43	0.070
Sat.	30	8 36 33.48	9.761	18 36 10.6	36.46	I 6.84	6 9.74	0.095
Sun.	31	8 40 27.73	9.735	18 21 35.6	37.21	I 6.75	6 7.44	0.121
Mon.	32	8 44 21.37		N.18 6 42.6		I 6.66	6 4.54	

* Mean Time of the Semidiameter passing may be found by subtracting 0^s.19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
Frid.	1	^h 6 ^m 39 ^s 27.40	[°] N.23 ['] 8 ["] 58.4	['] 15 ["] 46.0	^m 3 ^s 24.85	^h 6 ^m 36 ^s 2.55
Sat.	2	6 43 35.63	23 4 52.0	15 46.0	3 36.52	6 39 59.11
Sun.	3	6 47 43.58	23 0 21.4	15 46.0	3 47.91	6 43 55.67
Mon.	4	6 51 51.22	22 55 26.7	15 46.0	3 58.99	6 47 52.23
Tues.	5	6 55 58.55	22 50 8.0	15 46.0	4 9.76	6 51 48.79
Wed.	6	7 0 5.53	22 44 25.6	15 46.0	4 20.18	6 55 45.34
Thur.	7	7 4 12.13	22 38 19.5	15 46.0	4 30.23	6 59 41.90
Frid.	8	7 8 18.35	22 31 49.8	15 46.1	4 39.89	7 3 38.46
Sat.	9	7 12 24.16	22 24 56.9	15 46.1	4 49.14	7 7 35.02
Sun.	10	7 16 29.56	22 17 40.8	15 46.1	4 57.98	7 11 31.58
Mon.	11	7 20 34.52	22 10 1.8	15 46.2	5 6.38	7 15 28.14
Tues.	12	7 24 39.03	22 1 59.9	15 46.2	5 14.33	7 19 24.69
Wed.	13	7 28 43.07	21 53 35.4	15 46.3	5 21.82	7 23 21.25
Thur.	14	7 32 46.64	21 44 48.4	15 46.3	5 28.83	7 27 17.81
Frid.	15	7 36 49.73	21 35 39.2	15 46.4	5 35.36	7 31 14.37
Sat.	16	7 40 52.33	21 26 7.9	15 46.4	5 41.41	7 35 10.92
Sun.	17	7 44 54.42	21 16 14.8	15 46.5	5 46.94	7 39 7.48
Mon.	18	7 48 56.00	21 5 59.9	15 46.5	5 51.96	7 43 4.04
Tues.	19	7 52 57.07	20 55 23.6	15 46.6	5 56.47	7 47 0.60
Wed.	20	7 56 57.62	20 44 26.1	15 46.7	6 0.46	7 50 57.16
Thur.	21	8 0 57.63	20 33 7.5	15 46.7	6 3.92	7 54 53.71
Frid.	22	8 4 57.10	20 21 28.1	15 46.8	6 6.83	7 58 50.27
Sat.	23	8 8 56.02	20 9 28.2	15 46.9	6 9.19	8 2 46.83
Sun.	24	8 12 54.38	19 57 7.9	15 47.0	6 11.00	8 6 43.39
Mon.	25	8 16 52.19	19 44 27.5	15 47.1	6 12.25	8 10 39.94
Tues.	26	8 20 49.42	19 31 27.4	15 47.2	6 12.92	8 14 36.50
Wed.	27	8 24 46.07	19 18 7.7	15 47.3	6 13.01	8 18 33.06
Thur.	28	8 28 42.14	19 4 28.8	15 47.4	6 12.53	8 22 29.61
Frid.	29	8 32 37.61	18 50 30.9	15 47.5	6 11.44	8 26 26.17
Sat.	30	8 36 32.48	18 36 14.3	15 47.6	6 9.75	8 30 22.73
Sun.	31	8 40 26.74	18 21 39.4	15 47.7	6 7.45	8 34 19.29
Mon.	32	8 44 20.39	N.18 6 46.5	15 47.8	6 4.55	8 38 15.84

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	99 3 46 ^o 6 ["]	N. 0 ^o 21 ["]	0 ^o 0072238	16 40 ['] 6 ["]	16 40 ['] 3 ["]	61 3 ['] 6 ["]	61 2 ['] 7 ["]
2	100 0 59 ^o 9 ["]	N. 0 ^o 08 ["]	0 ^o 0072252	16 38 ['] 9 ["]	16 36 ['] 2 ["]	60 57 ['] 3 ["]	60 47 ['] 7 ["]
3	100 58 13 ^o 0 ["]	S. 0 ^o 06 ["]	0 ^o 0072240	16 32 ['] 6 ["]	16 28 ['] 1 ["]	60 34 ['] 4 ["]	60 17 ['] 7 ["]
4	101 55 25 ^o 9 ["]	0 ^o 20 ["]	0 ^o 0072203	16 22 ['] 8 ["]	16 16 ['] 9 ["]	59 58 ['] 4 ["]	59 37 ['] 0 ["]
5	102 52 38 ^o 7 ["]	0 ^o 33 ["]	0 ^o 0072142	16 10 ['] 7 ["]	16 4 ['] 2 ["]	59 14 ['] 1 ["]	58 50 ['] 3 ["]
6	103 49 51 ^o 4 ["]	0 ^o 45 ["]	0 ^o 0072058	15 57 ['] 5 ["]	15 50 ['] 9 ["]	58 26 ['] 0 ["]	58 1 ['] 8 ["]
7	104 47 3 ^o 8 ["]	0 ^o 56 ["]	0 ^o 0071951	15 44 ['] 5 ["]	15 38 ['] 2 ["]	57 38 ['] 1 ["]	57 15 ['] 0 ["]
8	105 44 16 ^o 0 ["]	0 ^o 65 ["]	0 ^o 0071823	15 32 ['] 1 ["]	15 26 ['] 4 ["]	56 53 ['] 0 ["]	56 32 ['] 1 ["]
9	106 41 28 ^o 1 ["]	0 ^o 70 ["]	0 ^o 0071675	15 21 ['] 1 ["]	15 16 ['] 1 ["]	56 12 ['] 5 ["]	55 54 ['] 3 ["]
10	107 38 40 ^o 2 ["]	0 ^o 72 ["]	0 ^o 0071509	15 11 ['] 5 ["]	15 7 ['] 3 ["]	55 37 ['] 5 ["]	55 22 ['] 1 ["]
11	108 35 52 ^o 2 ["]	0 ^o 72 ["]	0 ^o 0071325	15 3 ['] 5 ["]	15 0 ['] 0 ["]	55 8 ['] 0 ["]	54 55 ['] 3 ["]
12	109 33 4 ^o 4 ["]	0 ^o 68 ["]	0 ^o 0071125	14 56 ['] 9 ["]	14 54 ['] 2 ["]	54 44 ['] 0 ["]	54 34 ['] 0 ["]
13	110 30 16 ^o 7 ["]	0 ^o 62 ["]	0 ^o 0070911	14 51 ['] 8 ["]	14 49 ['] 7 ["]	54 25 ['] 2 ["]	54 17 ['] 7 ["]
14	111 27 29 ^o 2 ["]	0 ^o 54 ["]	0 ^o 0070683	14 48 ['] 0 ["]	14 46 ['] 6 ["]	54 11 ['] 4 ["]	54 6 ['] 4 ["]
15	112 24 42 ^o 0 ["]	0 ^o 43 ["]	0 ^o 0070440	14 45 ['] 6 ["]	14 44 ['] 9 ["]	54 2 ['] 7 ["]	54 0 ['] 2 ["]
16	113 21 55 ^o 2 ["]	0 ^o 31 ["]	0 ^o 0070183	14 44 ['] 7 ["]	14 44 ['] 8 ["]	53 59 ['] 2 ["]	53 59 ['] 6 ["]
17	114 19 9 ^o 0 ["]	0 ^o 18 ["]	0 ^o 0069911	14 45 ['] 3 ["]	14 46 ['] 3 ["]	54 1 ['] 5 ["]	54 5 ['] 0 ["]
18	115 16 23 ^o 4 ["]	S. 0 ^o 06 ["]	0 ^o 0069625	14 47 ['] 7 ["]	14 49 ['] 6 ["]	54 10 ['] 1 ["]	54 17 ['] 1 ["]
19	116 13 38 ^o 4 ["]	N. 0 ^o 06 ["]	0 ^o 0069324	14 52 ['] 0 ["]	14 54 ['] 9 ["]	54 25 ['] 9 ["]	54 36 ['] 6 ["]
20	117 10 54 ^o 2 ["]	0 ^o 17 ["]	0 ^o 0069008	14 58 ['] 4 ["]	15 2 ['] 5 ["]	54 49 ['] 4 ["]	55 4 ['] 3 ["]
21	118 8 10 ^o 8 ["]	0 ^o 26 ["]	0 ^o 0068674	15 7 ['] 1 ["]	15 12 ['] 3 ["]	55 21 ['] 2 ["]	55 40 ['] 2 ["]
22	119 5 28 ^o 2 ["]	0 ^o 32 ["]	0 ^o 0068322	15 18 ['] 0 ["]	15 24 ['] 3 ["]	56 1 ['] 2 ["]	56 24 ['] 1 ["]
23	120 2 46 ^o 5 ["]	0 ^o 36 ["]	0 ^o 0067951	15 31 ['] 0 ["]	15 38 ['] 1 ["]	56 48 ['] 8 ["]	57 14 ['] 9 ["]
24	121 0 5 ^o 8 ["]	0 ^o 36 ["]	0 ^o 0067559	15 45 ['] 6 ["]	15 53 ['] 3 ["]	57 42 ['] 2 ["]	58 10 ['] 3 ["]
25	121 57 26 ^o 1 ["]	0 ^o 33 ["]	0 ^o 0067144	16 1 ['] 0 ["]	16 8 ['] 7 ["]	58 38 ['] 6 ["]	59 6 ['] 7 ["]
26	122 54 47 ^o 3 ["]	0 ^o 28 ["]	0 ^o 0066707	16 16 ['] 1 ["]	16 23 ['] 0 ["]	59 33 ['] 8 ["]	59 59 ['] 3 ["]
27	123 52 9 ^o 4 ["]	0 ^o 19 ["]	0 ^o 0066246	16 29 ['] 4 ["]	16 34 ['] 9 ["]	60 22 ['] 5 ["]	60 42 ['] 7 ["]
28	124 49 32 ^o 5 ["]	N. 0 ^o 08 ["]	0 ^o 0065762	16 39 ['] 4 ["]	16 42 ['] 7 ["]	60 59 ['] 2 ["]	61 11 ['] 5 ["]
29	125 46 56 ^o 4 ["]	S. 0 ^o 04 ["]	0 ^o 0065254	16 44 ['] 8 ["]	16 45 ['] 6 ["]	61 19 ['] 2 ["]	61 21 ['] 8 ["]
30	126 44 21 ^o 2 ["]	0 ^o 17 ["]	0 ^o 0064721	16 44 ['] 9 ["]	16 42 ['] 9 ["]	61 19 ['] 4 ["]	61 12 ['] 1 ["]
31	127 41 46 ^o 8 ["]	0 ^o 31 ["]	0 ^o 0064162	16 39 ['] 7 ["]	16 35 ['] 3 ["]	61 0 ['] 3 ["]	60 44 ['] 1 ["]
32	128 39 13 ^o 2 ["]	S. 0 ^o 44 ["]	0 ^o 0063579	16 29 ['] 9 ["]	16 23 ['] 6 ["]	60 24 ['] 4 ["]	60 1 ['] 5 ["]

MEAN TIME.

THE MOON'S

Day of the Week.	Day of the Month.	Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
		° ' "	° ' "	° ' "	° ' "	d	h m
Frid.	1	111 36 7.8	119 8.16.3	N. 2 32 7.1	N. 1 55 16.7	0.9	1 1.7
Sat.	2	126 39 2.9	134 7 25.9	N. 1 16 30.1	N. 0 36 34.4	1.9	2 2.3
Sun.	3	141 32 31.7	148 53 35.5	S. 0 3 43.7	S. 0 43 38.0	2.9	2 58.1
Mon.	4	156 10 2.3	163 21 26.5	1 22 26.0	1 59 28.9	3.9	3 49.5
Tues.	5	170 27 31.8	177 28 9.6	2 34 13.8	3 6 12.0	4.9	4 38.0
Wed.	6	184 23 18.9	191 13 3.7	3 35 0.8	4 0 21.9	5.9	5 24.8
Thur.	7	197 57 33.3	204 37 0.2	4 22 2.4	4 39 52.4	6.9	6 11.4
Frid.	8	211 11 39.4	217 41 47.3	4 53 47.4	5 3 44.6	7.9	6 59.0
Sat.	9	224 7 41.6	230 29 39.8	5 9 45.0	5 11 51.3	8.9	7 48.2
Sun.	10	236 47 59.6	243 2 58.0	5 10 9.2	5 4 45.8	9.9	8 39.2
Mon.	11	249 14 51.0	255 23 54.2	4 55 49.8	4 43 31.7	10.9	9 31.6
Tues.	12	261 30 22.9	267 34 29.4	4 28 4.0	4 9 39.3	11.9	10 24.3
Wed.	13	273 36 28.7	279 36 33.7	3 48 32.6	3 24 59.3	12.9	11 16.1
Thur.	14	285 34 57.5	291 31 54.1	2 59 15.9	2 31 39.6	13.9	12 5.8
Frid.	15	297 27 37.8	303 22 23.8	2 2 28.3	1 32 0.7	14.9	12 52.7
Sat.	16	309 16 28.7	315 10 10.5	S. 1 0 35.4	S. 0 28 31.3	15.9	13 36.8
Sun.	17	321 3 48.8	326 57 45.1	N. 0 3 52.6	N. 0 36 17.4	16.9	14 18.6
Mon.	18	332 52 22.4	338 48 5.8	1 8 23.9	1 39 53.2	17.9	14 58.9
Tues.	19	344 45 22.4	350 44 40.5	2 10 26.6	2 39 45.2	18.9	15 38.7
Wed.	20	356 46 30.3	2 51 23.0	3 7 30.2	3 33 22.9	19.9	16 19.0
Thur.	21	8 59 50.5	15 12 25.2	3 57 4.4	4 18 15.2	20.9	17 1.2
Frid.	22	21 29 39.0	27 52 2.7	4 36 36.9	4 51 50.2	21.9	17 46.4
Sat.	23	34 20 4.9	40 54 11.8	5 3 36.2	5 11 36.9	22.9	18 35.9
Sun.	24	47 34 44.0	54 21 57.6	5 15 34.2	5 15 13.7	23.9	19 30.8
Mon.	25	61 16 1.5	68 16 56.3	5 10 22.1	5 0 49.8	24.9	20 31.0
Tues.	26	75 24 33.3	82 38 33.2	4 46 31.8	4 27 29.2	25.9	21 35.1
Wed.	27	89 58 25.9	97 23 30.5	4 3 49.3	3 35 47.2	26.9	22 40.2
Thur.	28	104 52 55.6	112 25 41.2	3 3 46.8	2 28 19.1	27.9	23 43.3
Frid.	29	120 0 39.9	127 36 40.1	1 50 2.7	N. 1 9 42.6	28.9	0
Sat.	30	135 12 28.6	142 46 53.2	N. 0 28 8.0	S. 0 13 50.0	0.6	0 42.5
Sun.	31	150 18 45.9	157 47 4.8	S. 0 55 20.2	1 35 34.2	1.6	1 37.4
Mon.	32	165 10 56.3	172 29 36.3	S. 2 13 47.7	S. 2 49 22.0	2.6	2 28.7

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
FRIDAY 1.				SUNDAY 3.			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	7 35 8.64	N.24 13 38.0	90.71	0	9 35 36.68	N.14 16 35.0	150.90
1	7 37 49.44	24 4 33.7	92.46	1	9 37 56.36	14 1 29.6	151.62
2	7 40 29.85	23 55 18.9	94.19	2	9 40 15.62	13 46 19.8	152.31
3	7 43 9.88	23 45 53.7	95.91	3	9 42 34.47	13 31 5.9	152.99
4	7 45 49.51	23 36 18.2	97.60	4	9 44 52.91	13 15 48.0	153.64
5	7 48 28.75	23 26 32.6	99.28	5	9 47 10.95	13 0 26.1	154.27
6	7 51 7.58	23 16 36.9	100.93	6	9 49 28.59	12 45 0.4	154.88
7	7 53 45.99	23 6 31.3	102.57	7	9 51 45.84	12 29 31.1	155.48
8	7 56 24.00	22 56 15.8	104.18	8	9 54 2.70	12 13 58.2	156.05
9	7 59 1.58	22 45 50.7	105.78	9	9 56 19.16	11 58 21.9	156.60
10	8 1 38.73	22 35 16.0	107.36	10	9 58 35.25	11 42 42.3	157.13
11	8 4 15.46	22 24 31.8	108.91	11	10 0 50.95	11 26 59.5	157.64
12	8 6 51.75	22 13 38.3	110.44	12	10 3 6.29	11 11 13.6	158.13
13	8 9 27.61	22 2 35.6	111.95	13	10 5 21.26	10 55 24.8	158.60
14	8 12 3.03	21 51 23.9	113.44	14	10 7 35.87	10 39 33.1	159.06
15	8 14 38.01	21 40 3.3	114.91	15	10 9 50.12	10 23 38.8	159.49
16	8 17 12.53	21 28 33.8	116.35	16	10 12 4.01	10 7 41.8	159.90
17	8 19 46.61	21 16 55.6	117.78	17	10 14 17.55	9 51 42.3	160.30
18	8 22 20.24	21 5 8.9	119.18	18	10 16 30.76	9 35 40.5	160.67
19	8 24 53.41	20 53 13.8	120.56	19	10 18 43.62	9 19 36.5	161.03
20	8 27 26.13	20 41 10.4	121.92	20	10 20 56.15	9 3 30.3	161.37
21	8 29 58.38	20 28 58.9	123.26	21	10 23 8.35	8 47 22.0	161.69
22	8 32 30.18	20 16 39.3	124.57	22	10 25 20.23	8 31 11.9	161.99
23	8 35 1.52	N.20 4 11.9	125.87	23	10 27 31.80	N. 8 14 59.9	162.27
SATURDAY 2.				MONDAY 4.			
0	8 37 32.39	N.19 51 36.6	127.13	0	10 29 43.04	N. 7 58 46.2	162.54
1	8 40 2.81	19 38 53.8	128.38	1	10 31 53.98	7 42 30.9	162.79
2	8 42 32.76	19 26 3.5	129.61	2	10 34 4.63	7 26 14.2	163.02
3	8 45 2.25	19 13 5.8	130.81	3	10 36 14.97	7 9 56.1	163.23
4	8 47 31.29	19 0 0.9	131.99	4	10 38 25.03	6 53 36.7	163.43
5	8 49 59.85	18 46 49.0	133.15	5	10 40 34.80	6 37 16.1	163.61
6	8 52 27.96	18 33 30.1	134.28	6	10 42 44.29	6 20 54.4	163.77
7	8 54 55.61	18 20 4.4	135.39	7	10 44 53.51	6 4 31.8	163.91
8	8 57 22.80	18 6 32.0	136.48	8	10 47 2.46	5 48 8.3	164.04
9	8 59 49.53	17 52 53.0	137.55	9	10 49 11.14	5 31 44.0	164.15
10	9 2 15.80	17 39 7.7	138.60	10	10 51 19.56	5 15 19.0	164.25
11	9 4 41.61	17 25 16.1	139.62	11	10 53 27.74	4 58 53.5	164.33
12	9 7 6.97	17 11 18.3	140.62	12	10 55 35.66	4 42 27.5	164.40
13	9 9 31.88	16 57 14.5	141.60	13	10 57 43.35	4 26 1.1	164.45
14	9 11 56.34	16 43 4.9	142.56	14	10 59 50.80	4 9 34.4	164.48
15	9 14 20.34	16 28 49.5	143.49	15	11 1 58.02	3 53 7.5	164.50
16	9 16 43.91	16 14 28.6	144.40	16	11 4 5.02	3 36 40.5	164.50
17	9 19 7.03	16 0 2.2	145.29	17	11 6 11.79	3 20 13.5	164.48
18	9 21 29.71	15 45 30.4	146.16	18	11 8 18.36	3 3 46.5	164.45
19	9 23 51.95	15 30 53.4	147.00	19	11 10 24.72	2 47 19.8	164.41
20	9 26 13.76	15 16 11.3	147.83	20	11 12 30.87	2 30 53.3	164.35
21	9 28 35.13	15 1 24.3	148.63	21	11 14 36.83	2 14 27.1	164.28
22	9 30 56.07	14 46 32.5	149.41	22	11 16 42.60	1 58 1.4	164.19
23	9 33 16.59	14 31 36.0	150.17	23	11 18 48.19	1 41 36.2	164.09
24	9 35 36.68	N.14 16 35.0		24	11 20 53.59	N. 1 25 11.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 5.				THURSDAY 7.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	11 20 53.59	N. 1 25 11.7	163.97	0	12 59 27.01	S. 11 5 3.0	143.73
1	11 22 58.82	1 8 47.9	163.84	1	13 1 30.04	11 19 25.4	143.04
2	11 25 3.88	0 52 24.8	163.69	2	13 3 33.13	11 33 43.7	142.34
3	11 27 8.78	0 36 2.6	163.53	3	13 5 36.29	11 47 57.8	141.63
4	11 29 13.53	0 19 41.4	163.36	4	13 7 39.53	12 2 7.6	140.91
5	11 31 18.12	N. 0 3 21.2	163.17	5	13 9 42.86	12 16 13.1	140.18
6	11 33 22.57	S. 0 12 57.8	162.97	6	13 11 46.26	12 30 14.2	139.44
7	11 35 26.87	0 29 15.7	162.76	7	13 13 49.75	12 44 10.9	138.69
8	11 37 31.04	0 45 32.3	162.53	8	13 15 53.34	12 58 3.0	137.93
9	11 39 35.08	1 1 47.5	162.29	9	13 17 57.01	13 11 50.7	137.17
10	11 41 39.00	1 18 1.3	162.04	10	13 20 0.79	13 25 33.7	136.39
11	11 43 42.80	1 34 13.6	161.78	11	13 22 4.67	13 39 12.0	135.60
12	11 45 46.49	1 50 24.3	161.50	12	13 24 8.65	13 52 45.7	134.81
13	11 47 50.07	2 6 33.3	161.21	13	13 26 12.74	14 6 14.6	134.00
14	11 49 53.54	2 22 40.6	160.91	14	13 28 16.94	14 19 38.6	133.19
15	11 51 56.92	2 38 46.1	160.59	15	13 30 21.26	14 32 57.8	132.37
16	11 54 0.21	2 54 49.7	160.26	16	13 32 25.70	14 46 12.0	131.53
17	11 56 3.41	3 10 51.3	159.92	17	13 34 30.25	14 59 21.2	130.69
18	11 58 6.53	3 26 50.9	159.57	18	13 36 34.94	15 12 25.4	129.84
19	12 0 9.57	3 42 48.3	159.20	19	13 38 39.74	15 25 24.5	128.98
20	12 2 12.54	3 58 43.5	158.83	20	13 40 44.68	15 38 18.4	128.10
21	12 4 15.44	4 14 36.5	158.44	21	13 42 49.75	15 51 7.0	127.22
22	12 6 18.29	4 30 27.2	158.04	22	13 44 54.96	16 3 50.4	126.34
23	12 8 21.08	S. 4 46 15.4	157.62	23	13 47 0.30	S. 16 16 28.4	125.44
WEDNESDAY 6.				FRIDAY 8.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	12 10 23.82	S. 5 2 1.2	157.20	0	13 49 5.79	S. 16 29 1.1	124.53
1	12 12 26.51	5 17 44.4	156.76	1	13 51 11.42	16 41 28.3	123.61
2	12 14 29.17	5 33 25.0	156.31	2	13 53 17.19	16 53 50.0	122.69
3	12 16 31.79	5 49 2.9	155.85	3	13 55 23.12	17 6 6.2	121.75
4	12 18 34.37	6 4 38.1	155.39	4	13 57 29.19	17 18 16.7	120.81
5	12 20 36.93	6 20 10.4	154.94	5	13 59 35.42	17 30 21.6	119.86
6	12 22 39.47	6 35 39.9	154.41	6	14 1 41.80	17 42 20.8	118.90
7	12 24 42.00	6 51 6.4	153.91	7	14 3 48.34	17 54 14.2	117.93
8	12 26 44.51	7 6 29.9	153.40	8	14 5 55.04	18 6 1.9	116.95
9	12 28 47.02	7 21 50.3	152.87	9	14 8 1.90	18 17 43.6	115.97
10	12 30 49.53	7 37 7.5	152.33	10	14 10 8.92	18 29 19.5	114.97
11	12 32 52.04	7 52 21.5	151.79	11	14 12 16.11	18 40 49.3	113.97
12	12 34 54.55	8 7 32.3	151.24	12	14 14 23.46	18 52 13.2	112.96
13	12 36 57.08	8 22 39.7	150.67	13	14 16 30.98	19 3 31.0	111.94
14	12 38 59.63	8 37 43.8	150.09	14	14 18 38.68	19 14 42.7	110.91
15	12 41 2.19	8 52 44.3	149.50	15	14 20 46.54	19 25 48.2	109.88
16	12 43 4.79	9 7 41.4	148.90	16	14 22 54.57	19 36 47.5	108.83
17	12 45 7.41	9 22 34.8	148.29	17	14 25 2.78	19 47 40.5	107.78
18	12 47 10.07	9 37 24.6	147.67	18	14 27 11.16	19 58 27.2	106.72
19	12 49 12.77	9 52 10.7	147.04	19	14 29 19.71	20 9 7.6	105.65
20	12 51 15.52	10 6 52.9	146.40	20	14 31 28.44	20 19 41.5	104.57
21	12 53 18.31	10 21 31.4	145.75	21	14 33 37.34	20 30 8.9	103.48
22	12 55 21.15	10 36 5.9	145.09	22	14 35 46.42	20 40 29.9	102.39
23	12 57 24.05	10 50 36.5	144.42	23	14 37 55.67	20 50 44.2	101.29
24	12 59 27.01	S. 11 5 3.0		24	14 40 5.11	S. 21 0 52.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 9.				MONDAY 11.			
0	h m s 14 40 5 ¹¹	S. 21 0 52 ⁰	100 ¹⁸	0	h m s 16 26 52 ⁴⁴	S. 26 43 36 ⁸	39 ¹¹
1	14 42 14 ⁷³	21 10 53 ¹	99 ⁰⁶	1	16 29 9 ¹¹	26 47 31 ⁵	37 ⁷²
2	14 44 24 ⁵³	21 20 47 ⁵	97 ⁹³	2	16 31 25 ⁸⁵	26 51 17 ⁸	36 ³⁸
3	14 46 34 ⁵⁰	21 30 35 ¹	96 ⁸⁰	3	16 33 42 ⁶⁶	26 54 55 ⁷	34 ⁹²
4	14 48 44 ⁶⁶	21 40 15 ⁹	95 ⁶⁶	4	16 35 59 ⁵⁴	26 58 25 ³	33 ⁵³
5	14 50 55 ⁰⁰	21 49 49 ⁹	94 ⁵¹	5	16 38 16 ⁴⁸	27 1 46 ⁵	32 ¹³
6	14 53 5 ⁵¹	21 59 17 ⁰	93 ³⁵	6	16 40 33 ⁴⁸	27 4 59 ³	30 ⁷²
7	14 55 16 ²⁰	22 8 37 ¹	92 ¹⁹	7	16 42 50 ⁵³	27 8 3 ⁷	29 ³²
8	14 57 27 ⁰⁸	22 17 50 ³	91 ⁰²	8	16 45 7 ⁶³	27 10 59 ⁶	27 ⁹¹
9	14 59 38 ¹³	22 26 56 ⁴	89 ⁸⁴	9	16 47 24 ⁷⁷	27 13 47 ¹	26 ⁵⁰
10	15 1 49 ³⁶	22 35 55 ⁵	88 ⁶⁵	10	16 49 41 ⁹⁵	27 16 26 ¹	25 ¹⁰
11	15 4 0 ⁷⁷	22 44 47 ⁴	87 ⁴⁶	11	16 51 59 ¹⁶	27 18 56 ⁷	23 ⁶⁹
12	15 6 12 ³⁵	22 53 32 ²	86 ²⁶	12	16 54 16 ³⁹	27 21 18 ⁹	22 ²⁸
13	15 8 24 ¹¹	23 2 9 ⁸	85 ⁰⁵	13	16 56 33 ⁶⁵	27 23 32 ⁶	20 ⁸⁷
14	15 10 36 ⁰⁵	23 10 40 ¹	83 ⁸⁴	14	16 58 50 ⁹³	27 25 37 ⁸	19 ⁴⁵
15	15 12 48 ¹⁵	23 19 3 ²	82 ⁶²	15	17 1 8 ²²	27 27 34 ⁶	18 ⁰⁴
16	15 15 0 ⁴³	23 27 18 ⁹	81 ³⁹	16	17 3 25 ⁵²	27 29 22 ⁸	16 ⁶³
17	15 17 12 ⁸⁹	23 35 27 ³	80 ¹⁶	17	17 5 42 ⁸²	27 31 2 ⁶	15 ²¹
18	15 19 25 ⁵¹	23 43 28 ³	78 ⁹¹	18	17 8 0 ¹²	27 32 33 ⁹	13 ⁸⁰
19	15 21 38 ³⁰	23 51 21 ⁸	77 ⁶⁷	19	17 10 17 ⁴¹	27 33 56 ⁷	12 ³⁸
20	15 23 51 ²⁶	23 59 7 ⁸	76 ⁴¹	20	17 12 34 ⁶⁹	27 35 11 ¹	10 ⁹⁷
21	15 26 4 ³⁹	24 6 46 ³	75 ¹⁵	21	17 14 51 ⁹⁴	27 36 16 ⁹	9 ⁵⁶
22	15 28 17 ⁶⁷	24 14 17 ²	73 ⁸⁹	22	17 17 9 ¹⁷	27 37 14 ³	8 ¹⁴
23	15 30 31 ¹³	S. 24 21 40 ⁶	72 ⁶¹	23	17 19 26 ³⁸	S. 27 38 3 ²	6 ⁷³
SUNDAY 10.				TUESDAY 12.			
0	15 32 44 ⁷⁴	S. 24 28 56 ³	71 ³⁴	0	17 21 43 ⁵⁴	S. 27 38 43 ⁶	5 ³²
1	15 34 58 ⁵¹	24 36 4 ³	70 ⁰⁵	1	17 24 0 ⁶⁷	27 39 15 ⁵	3 ⁹¹
2	15 37 12 ⁴⁴	24 43 4 ⁷	68 ⁷⁶	2	17 26 17 ⁷⁵	27 39 39 ⁰	2 ⁵⁰
3	15 39 26 ⁵²	24 49 57 ³	67 ⁴⁶	3	17 28 34 ⁷⁸	27 39 54 ⁰	1 ⁰⁹
4	15 41 40 ⁷⁴	24 56 42 ¹	66 ¹⁶	4	17 30 51 ⁷⁵	27 40 0 ⁶	0 ³⁰
5	15 43 55 ¹²	25 3 19 ⁰	64 ⁸⁵	5	17 33 8 ⁶⁶	27 39 58 ⁸	1 ⁷¹
6	15 46 9 ⁶⁵	25 9 48 ²	63 ⁵⁴	6	17 35 25 ⁵¹	27 39 48 ⁵	3 ¹¹
7	15 48 24 ³¹	25 16 9 ⁴	62 ²²	7	17 37 42 ²⁸	27 39 29 ⁸	4 ⁵⁰
8	15 50 39 ¹²	25 22 22 ⁸	60 ⁸⁹	8	17 39 58 ⁹⁸	27 39 2 ⁸	5 ⁹⁰
9	15 52 54 ⁰⁶	25 28 28 ²	59 ⁵⁶	9	17 42 15 ⁶⁰	27 38 27 ⁴	7 ²⁹
10	15 55 9 ¹⁴	25 34 25 ⁶	58 ²³	10	17 44 32 ¹³	27 37 43 ⁶	8 ⁶⁸
11	15 57 24 ³⁵	25 40 15 ⁰	56 ⁸⁹	11	17 46 48 ⁵⁷	27 36 51 ⁵	10 ⁰⁷
12	15 59 39 ⁶⁹	25 45 56 ⁴	55 ⁵⁵	12	17 49 4 ⁹¹	27 35 51 ⁰	11 ⁴⁵
13	16 1 55 ¹⁵	25 51 29 ⁷	54 ²⁰	13	17 51 21 ¹⁵	27 34 42 ³	12 ⁸³
14	16 4 10 ⁷⁴	25 56 54 ⁹	52 ⁸⁵	14	17 53 37 ²⁹	27 33 25 ²	14 ²¹
15	16 6 26 ⁴⁴	26 2 12 ⁰	51 ⁴⁹	15	17 55 53 ³²	27 31 59 ⁹	15 ⁵⁸
16	16 8 42 ²⁵	26 7 21 ⁰	50 ¹³	16	17 58 9 ²³	27 30 26 ⁴	16 ⁹⁵
17	16 10 58 ¹⁸	26 12 21 ⁸	48 ⁷⁶	17	18 0 25 ⁰²	27 28 44 ⁷	18 ³²
18	16 13 14 ²¹	26 17 14 ⁴	47 ³⁹	18	18 2 40 ⁶⁸	27 26 54 ⁷	19 ⁶⁸
19	16 15 30 ³⁵	26 21 58 ⁸	46 ⁰²	19	18 4 56 ²¹	27 24 56 ⁶	21 ⁰⁴
20	16 17 46 ⁵⁹	26 26 34 ⁹	44 ⁶⁴	20	18 7 11 ⁶¹	27 22 50 ⁴	22 ³⁹
21	16 20 2 ⁹²	26 31 2 ⁸	43 ²⁶	21	18 9 26 ⁸⁷	27 20 36 ⁰	23 ⁷⁴
22	16 22 19 ³⁴	26 35 22 ⁵	41 ⁸⁸	22	18 11 41 ⁹⁸	27 18 13 ⁵	25 ⁰⁸
23	16 24 35 ⁸⁵	26 39 33 ⁸	40 ⁵⁰	23	18 13 56 ⁹⁴	27 15 43 ⁰	26 ⁴²
24	16 26 52 ⁴⁴	S. 26 43 36 ⁸		24	18 16 11 ⁷⁵	S. 27 13 4 ⁴	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 13.				FRIDAY 15.			
0	18 16 11 ^h 75 ^m	S. 27 13 4 ^o 4 ⁿ	27 ^h 76 ^m	0	19 59 51 ^h 94 ^m	S. 22 41 13 ^o 3 ⁿ	83 ^h 74 ^m
1	18 18 26 ^h 40 ^m	27 10 17 ^o 8 ⁿ	29 ^h 09 ^m	1	20 1 55 ^h 34 ^m	22 32 50 ^o 8 ⁿ	84 ^h 70 ^m
2	18 20 40 ^h 88 ^m	27 7 23 ^o 3 ⁿ	30 ^h 41 ^m	2	20 3 58 ^h 47 ^m	22 24 22 ^o 6 ⁿ	85 ^h 66 ^m
3	18 22 55 ^h 20 ^m	27 4 20 ^o 8 ⁿ	31 ^h 73 ^m	3	20 6 1 ^h 33 ^m	22 15 48 ^o 6 ⁿ	86 ^h 61 ^m
4	18 25 9 ^h 35 ^m	27 1 10 ^o 3 ⁿ	33 ^h 04 ^m	4	20 8 3 ^h 91 ^m	22 7 8 ^o 9 ⁿ	87 ^h 55 ^m
5	18 27 23 ^h 32 ^m	26 57 52 ^o 0 ⁿ	34 ^h 35 ^m	5	20 10 6 ^h 23 ^m	21 58 23 ^o 6 ⁿ	88 ^h 48 ^m
6	18 29 37 ^h 10 ^m	26 54 25 ^o 9 ⁿ	35 ^h 65 ^m	6	20 12 8 ^h 27 ^m	21 49 32 ^o 7 ⁿ	89 ^h 40 ^m
7	18 31 50 ^h 71 ^m	26 50 52 ^o 0 ⁿ	36 ^h 95 ^m	7	20 14 10 ^h 04 ^m	21 40 36 ^o 2 ⁿ	90 ^h 31 ^m
8	18 34 4 ^h 13 ^m	26 47 10 ^o 3 ⁿ	38 ^h 24 ^m	8	20 16 11 ^h 54 ^m	21 31 34 ^o 3 ⁿ	91 ^h 22 ^m
9	18 36 17 ^h 35 ^m	26 43 20 ^o 8 ⁿ	39 ^h 52 ^m	9	20 18 12 ^h 78 ^m	21 22 27 ^o 0 ⁿ	92 ^h 11 ^m
10	18 38 30 ^h 38 ^m	26 39 23 ^o 7 ⁿ	40 ^h 80 ^m	10	20 20 13 ^h 74 ^m	21 13 14 ^o 3 ⁿ	93 ^h 00 ^m
11	18 40 43 ^h 21 ^m	26 35 18 ^o 9 ⁿ	42 ^h 07 ^m	11	20 22 14 ^h 43 ^m	21 3 56 ^o 3 ⁿ	93 ^h 87 ^m
12	18 42 55 ^h 83 ^m	26 31 6 ^o 4 ⁿ	43 ^h 33 ^m	12	20 24 14 ^h 86 ^m	20 54 33 ^o 0 ⁿ	94 ^h 74 ^m
13	18 45 8 ^h 25 ^m	26 26 46 ^o 4 ⁿ	44 ^h 59 ^m	13	20 26 15 ^h 02 ^m	20 45 4 ^o 5 ⁿ	95 ^h 60 ^m
14	18 47 20 ^h 46 ^m	26 22 18 ^o 8 ⁿ	45 ^h 84 ^m	14	20 28 14 ^h 91 ^m	20 35 30 ^o 9 ⁿ	96 ^h 45 ^m
15	18 49 32 ^h 45 ^m	26 17 43 ^o 7 ⁿ	47 ^h 08 ^m	15	20 30 14 ^h 54 ^m	20 25 52 ^o 2 ⁿ	97 ^h 29 ^m
16	18 51 44 ^h 23 ^m	26 13 1 ^o 2 ⁿ	48 ^h 32 ^m	16	20 32 13 ^h 90 ^m	20 16 8 ^o 4 ⁿ	98 ^h 12 ^m
17	18 53 55 ^h 79 ^m	26 8 11 ^o 2 ⁿ	49 ^h 55 ^m	17	20 34 13 ^h 00 ^m	20 6 19 ^o 6 ⁿ	98 ^h 95 ^m
18	18 56 7 ^h 12 ^m	26 3 13 ^o 9 ⁿ	50 ^h 77 ^m	18	20 36 11 ^h 84 ^m	19 56 25 ^o 9 ⁿ	99 ^h 76 ^m
19	18 58 18 ^h 23 ^m	25 58 9 ^o 3 ⁿ	51 ^h 99 ^m	19	20 38 10 ^h 42 ^m	19 46 27 ^o 3 ⁿ	100 ^h 56 ^m
20	19 0 29 ^h 11 ^m	25 52 57 ^o 3 ⁿ	53 ^h 19 ^m	20	20 40 8 ^h 74 ^m	19 36 23 ^o 9 ⁿ	101 ^h 36 ^m
21	19 2 39 ^h 76 ^m	25 47 38 ^o 1 ⁿ	54 ^h 39 ^m	21	20 42 6 ^h 80 ^m	19 26 15 ^o 7 ⁿ	102 ^h 15 ^m
22	19 4 50 ^h 17 ^m	25 42 11 ^o 7 ⁿ	55 ^h 59 ^m	22	20 44 4 ^h 61 ^m	19 16 2 ^o 8 ⁿ	102 ^h 93 ^m
23	19 7 0 ^h 35 ^m	S. 25 36 38 ^o 1 ⁿ	56 ^h 78 ^m	23	20 46 2 ^h 16 ^m	S. 19 5 45 ^o 2 ⁿ	103 ^h 70 ^m
THURSDAY 14.				SATURDAY 16.			
0	19 9 10 ^h 28 ^m	S. 25 30 57 ^o 4 ⁿ	57 ^h 96 ^m	0	20 47 59 ^h 46 ^m	S. 18 55 23 ^o 0 ⁿ	104 ^h 46 ^m
1	19 11 19 ^h 97 ^m	25 25 9 ^o 6 ⁿ	59 ^h 13 ^m	1	20 49 56 ^h 51 ^m	18 44 56 ^o 2 ⁿ	105 ^h 21 ^m
2	19 13 29 ^h 42 ^m	25 19 14 ^o 9 ⁿ	60 ^h 29 ^m	2	20 51 53 ^h 31 ^m	18 34 24 ^o 9 ⁿ	105 ^h 95 ^m
3	19 15 38 ^h 62 ^m	25 13 13 ^o 1 ⁿ	61 ^h 44 ^m	3	20 53 49 ^h 86 ^m	18 23 49 ^o 2 ⁿ	106 ^h 69 ^m
4	19 17 47 ^h 58 ^m	25 7 4 ^o 4 ⁿ	62 ^h 59 ^m	4	20 55 46 ^h 17 ^m	18 13 9 ^o 0 ⁿ	107 ^h 41 ^m
5	19 19 56 ^h 28 ^m	25 0 48 ^o 9 ⁿ	63 ^h 73 ^m	5	20 57 42 ^h 24 ^m	18 2 24 ^o 5 ⁿ	108 ^h 13 ^m
6	19 22 4 ^h 73 ^m	24 54 26 ^o 5 ⁿ	64 ^h 86 ^m	6	20 59 38 ^h 06 ^m	17 51 35 ^o 7 ⁿ	108 ^h 84 ^m
7	19 24 12 ^h 93 ^m	24 47 57 ^o 3 ⁿ	65 ^h 98 ^m	7	21 1 33 ^h 64 ^m	17 40 42 ^o 6 ⁿ	109 ^h 54 ^m
8	19 26 20 ^h 87 ^m	24 41 21 ^o 4 ⁿ	67 ^h 09 ^m	8	21 3 28 ^h 99 ^m	17 29 45 ^o 4 ⁿ	110 ^h 23 ^m
9	19 28 28 ^h 55 ^m	24 34 38 ^o 8 ⁿ	68 ^h 20 ^m	9	21 5 24 ^h 10 ^m	17 18 43 ^o 9 ⁿ	110 ^h 91 ^m
10	19 30 35 ^h 97 ^m	24 27 49 ^o 6 ⁿ	69 ^h 29 ^m	10	21 7 18 ^h 98 ^m	17 7 38 ^o 4 ⁿ	111 ^h 59 ^m
11	19 32 43 ^h 13 ^m	24 20 53 ^o 8 ⁿ	70 ^h 38 ^m	11	21 9 13 ^h 62 ^m	16 56 28 ^o 9 ⁿ	112 ^h 26 ^m
12	19 34 50 ^h 03 ^m	24 13 51 ^o 5 ⁿ	71 ^h 46 ^m	12	21 11 8 ^h 04 ^m	16 45 15 ^o 3 ⁿ	112 ^h 91 ^m
13	19 36 56 ^h 67 ^m	24 6 42 ^o 7 ⁿ	72 ^h 53 ^m	13	21 13 2 ^h 23 ^m	16 33 57 ^o 8 ⁿ	113 ^h 56 ^m
14	19 39 3 ^h 03 ^m	23 59 27 ^o 5 ⁿ	73 ^h 59 ^m	14	21 14 56 ^h 20 ^m	16 22 36 ^o 4 ⁿ	114 ^h 20 ^m
15	19 41 9 ^h 14 ^m	23 52 5 ^o 9 ⁿ	74 ^h 65 ^m	15	21 16 49 ^h 95 ^m	16 11 11 ^o 2 ⁿ	114 ^h 83 ^m
16	19 43 14 ^h 97 ^m	23 44 38 ^o 0 ⁿ	75 ^h 69 ^m	16	21 18 43 ^h 49 ^m	15 59 42 ^o 1 ⁿ	115 ^h 46 ^m
17	19 45 20 ^h 54 ^m	23 37 3 ^o 8 ⁿ	76 ^h 73 ^m	17	21 20 36 ^h 80 ^m	15 48 9 ^o 3 ⁿ	116 ^h 07 ^m
18	19 47 25 ^h 84 ^m	23 29 23 ^o 4 ⁿ	77 ^h 76 ^m	18	21 22 29 ^h 90 ^m	15 36 32 ^o 8 ⁿ	116 ^h 68 ^m
19	19 49 30 ^h 87 ^m	23 21 36 ^o 8 ⁿ	78 ^h 78 ^m	19	21 24 22 ^h 79 ^m	15 24 52 ^o 7 ⁿ	117 ^h 28 ^m
20	19 51 35 ^h 63 ^m	23 13 44 ^o 1 ⁿ	79 ^h 79 ^m	20	21 26 15 ^h 48 ^m	15 13 9 ^o 0 ⁿ	117 ^h 87 ^m
21	19 53 40 ^h 11 ^m	23 5 45 ^o 4 ⁿ	80 ^h 79 ^m	21	21 28 7 ^h 96 ^m	15 1 21 ^o 8 ⁿ	118 ^h 45 ^m
22	19 55 44 ^h 33 ^m	22 57 40 ^o 6 ⁿ	81 ^h 78 ^m	22	21 30 0 ^h 23 ^m	14 49 31 ^o 0 ⁿ	119 ^h 03 ^m
23	19 57 48 ^h 27 ^m	22 49 29 ^o 9 ⁿ	82 ^h 76 ^m	23	21 31 52 ^h 31 ^m	14 37 36 ^o 8 ⁿ	119 ^h 60 ^m
24	19 59 51 ^h 94 ^m	S. 22 41 13 ^o 3 ⁿ		24	21 33 44 ^h 19 ^m	S. 14 25 39 ^o 2 ⁿ	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 17.				TUESDAY 19.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	21 33 44.19	S. 14 25 39.2	120.15	0	23 0 29.48	S. 4 0 8.3	138.01
1	21 35 35.88	14 13 38.2	120.70	1	23 2 16.00	3 46 20.2	138.30
2	21 37 27.38	14 1 34.0	121.25	2	23 4 2.51	3 32 31.0	138.39
3	21 39 18.69	13 49 26.5	121.78	3	23 5 49.01	3 18 40.6	138.57
4	21 41 9.82	13 37 15.8	122.31	4	23 7 35.51	3 4 49.1	138.75
5	21 43 0.77	13 25 1.9	122.82	5	23 9 22.01	2 50 56.6	138.91
6	21 44 51.54	13 12 44.9	123.33	6	23 11 8.52	2 37 3.1	139.07
7	21 46 42.13	13 0 24.9	123.84	7	23 12 55.04	2 23 8.6	139.23
8	21 48 32.56	12 48 1.8	124.33	8	23 14 41.57	2 9 13.2	139.37
9	21 50 22.81	12 35 35.8	124.82	9	23 16 28.12	1 55 17.0	139.51
10	21 52 12.90	12 23 6.9	125.30	10	23 18 14.69	1 41 19.9	139.64
11	21 54 2.82	12 10 35.1	125.77	11	23 20 1.29	1 27 22.0	139.77
12	21 55 52.59	11 58 0.4	126.23	12	23 21 47.93	1 13 23.3	139.89
13	21 57 42.20	11 45 23.0	126.69	13	23 23 34.60	0 59 23.9	140.00
14	21 59 31.67	11 32 42.8	127.14	14	23 25 21.32	0 45 23.9	140.10
15	22 1 20.98	11 20 0.0	127.58	15	23 27 8.08	0 31 23.3	140.20
16	22 3 10.15	11 7 14.5	128.01	16	23 28 54.89	0 17 22.1	140.29
17	22 4 59.18	10 54 26.4	128.43	17	23 30 41.75	S. 0 3 20.4	140.37
18	22 6 48.07	10 41 35.8	128.85	18	23 32 28.67	N. 0 10 41.9	140.44
19	22 8 36.83	10 28 42.6	129.26	19	23 34 15.66	0 24 44.6	140.51
20	22 10 25.45	10 15 47.0	129.67	20	23 36 2.72	0 38 47.7	140.57
21	22 12 13.95	10 2 49.0	130.06	21	23 37 49.85	0 52 51.2	140.63
22	22 14 2.33	9 49 48.6	130.45	22	23 39 37.05	1 6 54.9	140.67
23	22 15 50.59	S. 9 36 45.9	130.83	23	23 41 24.34	N. 1 20 59.0	140.71
MONDAY 18.				WEDNESDAY 20.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	22 17 38.73	S. 9 23 40.9	131.20	0	23 43 11.71	N. 1 35 3.3	140.74
1	22 19 26.76	9 10 33.7	131.57	1	23 44 59.18	1 49 7.8	140.77
2	22 21 14.68	8 57 24.2	131.93	2	23 46 46.74	2 3 12.4	140.79
3	22 23 2.50	8 44 12.7	132.28	3	23 48 34.40	2 17 17.2	140.79
4	22 24 50.22	8 30 59.0	132.62	4	23 50 22.17	2 31 22.0	140.84
5	22 26 37.84	8 17 43.2	132.96	5	23 52 10.05	2 45 26.8	140.79
6	22 28 25.36	8 4 25.4	133.29	6	23 53 58.04	2 59 31.5	140.79
7	22 30 12.80	7 51 5.7	133.61	7	23 55 46.16	3 13 36.2	140.79
8	22 32 0.15	7 37 44.0	133.93	8	23 57 34.39	3 27 40.8	140.79
9	22 33 47.42	7 24 20.4	134.23	9	23 59 22.76	3 41 45.2	140.69
10	22 35 34.62	7 10 55.0	134.54	10	0 1 11.27	3 55 49.3	140.69
11	22 37 21.74	6 57 27.7	134.83	11	0 2 59.91	4 9 53.2	140.59
12	22 39 8.79	6 43 58.7	135.12	12	0 4 48.69	4 23 56.8	140.59
13	22 40 55.78	6 30 28.0	135.40	13	0 6 37.63	4 38 0.0	140.49
14	22 42 42.70	6 16 55.5	135.67	14	0 8 26.71	4 52 2.8	140.39
15	22 44 29.57	6 3 21.5	135.94	15	0 10 15.96	5 6 5.2	140.39
16	22 46 16.39	5 49 45.8	136.20	16	0 12 5.37	5 20 7.0	140.29
17	22 48 3.15	5 36 8.5	136.45	17	0 13 54.95	5 34 8.3	140.19
18	22 49 49.87	5 22 29.9	136.69	18	0 15 44.70	5 48 9.0	140.09
19	22 51 36.55	5 8 49.7	136.93	19	0 17 34.63	6 2 9.1	139.89
20	22 53 23.20	4 55 8.1	137.16	20	0 19 24.75	6 16 8.4	139.79
21	22 55 9.81	4 41 25.1	137.38	21	0 21 15.05	6 30 7.0	139.69
22	22 56 56.39	4 27 40.8	137.60	22	0 23 5.54	6 44 4.8	139.49
23	22 58 42.95	4 13 55.2	137.81	23	0 24 56.24	6 58 1.7	139.39
24	23 0 29.48	S. 4 0 8.3		24	0 26 47.13	N. 7 11 57.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 21.				SATURDAY 23.			
0	h m s 26 47 13	N. 7 11 57.7	139.17	0	h m s 2 1 7.29	N. 17 43 57.2	119.44
1	0 28 38.24	7 25 52.8	139.00	1	2 3 14.24	17 55 53.9	118.73
2	0 30 29.55	7 39 46.8	138.82	2	2 5 21.63	18 7 46.3	118.01
3	0 32 21.09	7 53 39.8	138.64	3	2 7 29.48	18 19 34.4	117.26
4	0 34 12.84	8 7 31.6	138.44	4	2 9 37.78	18 31 18.0	116.51
5	0 36 4.83	8 21 22.3	138.24	5	2 11 46.53	18 42 57.1	115.74
6	0 37 57.05	8 35 11.8	138.03	6	2 13 55.75	18 54 31.5	114.95
7	0 39 49.51	8 49 0.0	137.80	7	2 16 5.43	19 6 1.3	114.15
8	0 41 42.21	9 2 46.8	137.57	8	2 18 15.58	19 17 26.2	113.33
9	0 43 35.16	9 16 32.3	137.33	9	2 20 26.20	19 28 46.2	112.50
10	0 45 28.36	9 30 16.3	137.08	10	2 22 37.30	19 40 1.3	111.65
11	0 47 21.82	9 43 58.8	136.82	11	2 24 48.88	19 51 11.2	110.79
12	0 49 15.55	9 57 39.8	136.56	12	2 27 0.94	20 2 16.0	109.91
13	0 51 9.54	10 11 19.2	136.28	13	2 29 13.48	20 13 15.5	109.01
14	0 53 3.81	10 24 56.9	135.99	14	2 31 26.51	20 24 9.6	108.10
15	0 54 58.35	10 38 32.8	135.69	15	2 33 40.03	20 34 58.2	107.17
16	0 56 53.18	10 52 7.0	135.38	16	2 35 54.04	20 45 41.3	106.23
17	0 58 48.30	11 5 39.3	135.06	17	2 38 8.55	20 56 18.7	105.27
18	1 0 43.71	11 19 9.7	134.73	18	2 40 23.56	21 6 50.3	104.29
19	1 2 39.42	11 32 38.1	134.39	19	2 42 39.07	21 17 16.1	103.30
20	1 4 35.43	11 46 4.5	134.04	20	2 44 55.08	21 27 35.9	102.29
21	1 6 31.76	11 59 28.7	133.68	21	2 47 11.60	21 37 49.6	101.26
22	1 8 28.39	12 12 50.8	133.31	22	2 49 28.63	21 47 57.2	100.22
23	1 10 25.35	N. 12 26 10.7	132.92	23	2 51 46.16	N. 21 57 58.5	99.15
FRIDAY 22.				SUNDAY 24.			
0	1 12 22.64	N. 12 39 28.3	132.53	0	2 54 4.21	N. 22 7 53.5	98.08
1	1 14 20.25	12 52 43.5	132.12	1	2 56 22.77	22 17 42.0	96.99
2	1 16 18.20	13 5 56.3	131.71	2	2 58 41.84	22 27 24.0	95.87
3	1 18 16.48	13 19 6.6	131.28	3	3 1 1.43	22 36 59.3	94.74
4	1 20 15.11	13 32 14.3	130.84	4	3 3 21.54	22 46 27.7	93.60
5	1 22 14.08	13 45 19.3	130.39	5	3 5 42.17	22 55 49.3	92.43
6	1 24 13.41	13 58 21.7	129.93	6	3 8 3.31	23 5 4.0	91.25
7	1 26 13.10	14 11 21.3	129.45	7	3 10 24.97	23 14 11.5	90.04
8	1 28 13.15	14 24 18.0	128.96	8	3 12 47.15	23 23 11.7	88.82
9	1 30 13.57	14 37 11.8	128.47	9	3 15 9.85	23 32 4.7	87.59
10	1 32 14.37	14 50 2.6	127.95	10	3 17 33.07	23 40 50.3	86.33
11	1 34 15.54	15 2 50.4	127.43	11	3 19 56.81	23 49 28.3	85.06
12	1 36 17.09	15 15 35.0	126.89	12	3 22 21.06	23 57 58.7	83.77
13	1 38 19.03	15 28 16.4	126.34	13	3 24 45.84	24 6 21.3	82.46
14	1 40 21.36	15 40 54.5	125.78	14	3 27 11.13	24 14 36.1	81.13
15	1 42 24.10	15 53 29.2	125.21	15	3 29 36.94	24 22 42.9	79.78
16	1 44 27.23	16 6 0.5	124.62	16	3 32 3.26	24 30 41.7	78.43
17	1 46 30.77	16 18 28.3	124.02	17	3 34 30.10	24 38 32.2	77.04
18	1 48 34.72	16 30 52.4	123.41	18	3 36 57.45	24 46 14.5	75.64
19	1 50 39.08	16 43 12.9	122.78	19	3 39 25.30	24 53 48.3	74.22
20	1 52 43.87	16 55 29.6	122.14	20	3 41 53.67	25 1 13.6	72.78
21	1 54 49.08	17 7 42.5	121.48	21	3 44 22.54	25 8 30.3	71.33
22	1 56 54.72	17 19 51.4	120.82	22	3 46 51.92	25 15 38.3	69.85
23	1 59 0.78	17 31 56.3	120.13	23	3 49 21.79	25 22 37.5	68.36
24	2 1 7.29	N. 17 43 57.2		24	3 51 52.16	N. 25 29 27.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
MONDAY 25.				WEDNESDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	3 51 52.16	N.25 29 27.7	66.86	0	5 59 52.95	N.27 31 23.9	22.55
1	3 54 23.02	25 36 8.9	65.33	1	6 2 38.93	27 29 8.6	24.63
2	3 56 54.38	25 42 40.9	63.79	2	6 5 24.97	27 26 40.8	26.70
3	3 59 26.22	25 49 3.6	62.22	3	6 8 11.05	27 24 0.5	28.78
4	4 1 58.54	25 55 17.0	60.65	4	6 10 57.17	27 21 7.8	30.86
5	4 4 31.34	26 1 20.9	59.05	5	6 13 43.30	27 18 2.6	32.94
6	4 7 4.62	26 7 15.2	57.43	6	6 16 29.44	27 14 44.9	35.02
7	4 9 38.36	26 12 59.9	55.80	7	6 19 15.58	27 11 14.8	37.09
8	4 12 12.57	26 18 34.7	54.16	8	6 22 1.70	27 7 32.2	39.16
9	4 14 47.23	26 23 59.7	52.49	9	6 24 47.79	27 3 37.2	41.23
10	4 17 22.35	26 29 14.7	50.81	10	6 27 33.84	26 59 29.8	43.30
11	4 19 57.91	26 34 19.6	49.12	11	6 30 19.83	26 55 9.9	45.36
12	4 22 33.91	26 39 14.3	47.40	12	6 33 5.77	26 50 37.7	47.42
13	4 25 10.35	26 43 58.7	45.67	13	6 35 51.63	26 45 53.1	49.48
14	4 27 47.22	26 48 32.8	43.93	14	6 38 37.39	26 40 56.2	51.53
15	4 30 24.51	26 52 56.4	42.16	15	6 41 23.06	26 35 47.0	53.57
16	4 33 2.21	26 57 9.4	40.39	16	6 44 8.61	26 30 25.6	55.60
17	4 35 40.32	27 1 11.7	38.60	17	6 46 54.04	26 24 52.0	57.63
18	4 38 18.83	27 5 3.3	36.79	18	6 49 39.34	26 19 6.2	59.65
19	4 40 57.73	27 8 44.1	34.97	19	6 52 24.49	26 13 8.2	61.66
20	4 43 37.01	27 12 14.0	33.13	20	6 55 9.49	26 6 58.2	63.67
21	4 46 16.66	27 15 32.8	31.28	21	6 57 54.32	26 0 36.2	65.66
22	4 48 56.68	27 18 40.5	29.42	22	7 0 38.97	25 54 2.2	67.65
23	4 51 37.06	N.27 21 37.1	27.55	23	7 3 23.43	N.25 47 16.3	69.62
TUESDAY 26.				THURSDAY 28.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	4 54 17.79	N.27 24 22.4	25.65	0	7 6 7.70	N.25 40 18.6	71.59
1	4 56 58.86	27 26 56.4	23.75	1	7 8 51.75	25 33 9.0	73.54
2	4 59 40.25	27 29 18.9	21.84	2	7 11 35.59	25 25 47.8	75.48
3	5 2 21.97	27 31 30.0	19.91	3	7 14 19.21	25 18 14.9	77.41
4	5 5 3.99	27 33 29.5	17.98	4	7 17 2.58	25 10 30.4	79.33
5	5 7 46.31	27 35 17.4	16.03	5	7 19 45.71	25 2 34.4	81.23
6	5 10 28.93	27 36 53.6	14.07	6	7 22 28.58	24 54 27.0	83.12
7	5 13 11.82	27 38 18.0	12.10	7	7 25 11.19	24 46 8.3	84.99
8	5 15 54.98	27 39 30.6	10.12	8	7 27 53.53	24 37 38.3	86.86
9	5 18 38.40	27 40 31.3	8.13	9	7 30 35.58	24 28 57.1	88.70
10	5 21 22.07	27 41 20.1	6.13	10	7 33 17.35	24 20 4.8	90.53
11	5 24 5.97	27 41 56.9	4.12	11	7 35 58.83	24 11 1.6	92.35
12	5 26 50.09	27 42 21.7	2.10	12	7 38 39.99	24 1 47.5	94.15
13	5 29 34.44	27 42 34.4	0.08	13	7 41 20.84	23 52 22.5	95.94
14	5 32 18.98	27 42 34.9	1.94	14	7 44 1.38	23 42 46.9	97.70
15	5 35 3.72	27 42 23.2	3.98	15	7 46 41.59	23 33 0.7	99.45
16	5 37 48.63	27 41 59.3	6.02	16	7 49 21.47	23 23 3.9	101.18
17	5 40 33.71	27 41 23.1	8.07	17	7 52 1.01	23 12 56.8	102.89
18	5 43 18.95	27 40 34.6	10.13	18	7 54 40.21	23 2 39.4	104.59
19	5 46 4.33	27 39 33.8	12.19	19	7 57 19.06	22 52 11.8	106.27
20	5 48 49.84	27 38 20.6	14.25	20	7 59 57.56	22 41 34.2	107.92
21	5 51 35.47	27 36 55.1	16.32	21	8 2 35.69	22 30 46.6	109.56
22	5 54 21.21	27 35 17.1	18.39	22	8 5 13.46	22 19 49.2	111.18
23	5 57 7.04	27 33 26.7	20.47	23	8 7 50.86	22 8 42.1	112.78
24	5 59 52.95	N.27 31 23.9		24	8 10 27.88	N.21 57 25.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
FRIDAY 29.				SUNDAY 31.			
0	^h 8 ^m 10 ^s 27.88	N. 21 57 25.4	114.37	0	^h 10 ^m 8 ^s 14.60	N. 10 30 29.3	164.19
1	8 13 4.52	21 45 59.2	115.92	1	10 10 32.41	10 14 4.1	164.68
2	8 15 40.78	21 34 23.6	117.46	2	10 12 49.89	9 57 36.0	165.14
3	8 18 16.66	21 22 38.8	118.98	3	10 15 7.04	9 41 5.1	165.59
4	8 20 52.14	21 10 44.9	120.48	4	10 17 23.86	9 24 31.6	166.01
5	8 23 27.23	20 58 42.0	121.96	5	10 19 40.36	9 7 55.5	166.41
6	8 26 1.93	20 46 30.2	123.41	6	10 21 56.54	8 51 17.0	166.79
7	8 28 36.23	20 34 9.7	124.85	7	10 24 12.41	8 34 36.3	167.15
8	8 31 10.12	20 21 40.6	126.26	8	10 26 27.96	8 17 53.4	167.49
9	8 33 43.61	20 9 3.0	127.65	9	10 28 43.22	8 1 8.4	167.81
10	8 36 16.70	19 56 17.0	129.02	10	10 30 58.17	7 44 21.5	168.10
11	8 38 49.38	19 43 22.8	130.37	11	10 33 12.83	7 27 32.9	168.38
12	8 41 21.65	19 30 20.6	131.70	12	10 35 27.19	7 10 42.6	168.64
13	8 43 53.51	19 17 10.4	133.00	13	10 37 41.27	6 53 50.8	168.87
14	8 46 24.96	19 3 52.4	134.28	14	10 39 55.08	6 36 57.5	169.09
15	8 48 56.00	18 50 26.7	135.53	15	10 42 8.61	6 20 2.9	169.29
16	8 51 26.62	18 36 53.4	136.77	16	10 44 21.87	6 3 7.1	169.47
17	8 53 56.83	18 23 12.8	137.98	17	10 46 34.86	5 46 10.3	169.63
18	8 56 26.63	18 9 24.9	139.17	18	10 48 47.59	5 29 12.5	169.77
19	8 58 56.02	17 55 29.8	140.34	19	10 51 0.07	5 12 13.9	169.89
20	9 1 24.99	17 41 27.8	141.48	20	10 53 12.30	4 55 14.5	169.99
21	9 3 53.55	17 27 18.9	142.60	21	10 55 24.28	4 38 14.5	170.07
22	9 6 21.69	17 13 3.2	143.70	22	10 57 36.02	4 21 14.0	170.14
23	9 8 49.43	N. 16 58 41.0	144.78	23	10 59 47.53	N. 4 4 13.2	170.18
SATURDAY 30.				MONDAY, AUGUST 1.			
0	9 11 16.75	N. 16 44 12.3	145.82	0	11 1 58.81	N. 3 47 12.1	
1	9 13 43.67	16 29 37.3	146.85				
2	9 16 10.18	16 14 56.2	147.86				
3	9 18 36.28	16 0 9.0	148.84				
4	9 21 1.97	15 45 16.0	149.80				
5	9 23 27.27	15 30 17.2	150.73				
6	9 25 52.16	15 15 12.7	151.64				
7	9 28 16.65	15 0 2.8	152.53				
8	9 30 40.74	14 44 47.6	153.40				
9	9 33 4.44	14 29 27.2	154.25				
10	9 35 27.75	14 14 1.7	155.07				
11	9 37 50.66	13 58 31.2	155.87				
12	9 40 13.19	13 42 56.0	156.64				
13	9 42 35.34	13 27 16.1	157.39				
14	9 44 57.11	13 11 31.7	158.12				
15	9 47 18.50	12 55 43.0	158.83				
16	9 49 39.51	12 39 50.0	159.51				
17	9 52 0.16	12 23 52.9	160.18				
18	9 54 20.43	12 7 51.8	160.82				
19	9 56 40.35	11 51 46.9	161.43				
20	9 58 59.90	11 35 38.2	162.03				
21	10 1 19.10	11 19 26.0	162.60				
22	10 3 37.95	11 3 10.4	163.15				
23	10 5 56.44	10 46 51.4	163.68				
24	10 8 14.60	N. 10 30 29.3					

PHASES OF THE MOON.

		d	h	m
☾	First Quarter	-	6	17 53.9
◯	Full Moon	-	14	12 53.2
☾	Last Quarter	-	22	15 25.7
●	New Moon	-	29	9 43.6

		d	h
☾	Perigee	-	1 4
☾	Apogee	-	16 3
☾	Perigee	-	29 12

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
2	SUN W.	26 39 45	2353	28 24 27	2355	30 9 6	2359	31 53 40	2364
	Spica E.	75 17 41	2035	73 25 2	2041	71 32 32	2048	69 40 12	2055
	Antares E.	121 9 30	2031	119 16 44	2037	117 24 7	2044	115 31 41	2050
3	SUN W.	40 34 19	2401	42 17 52	2412	44 1 10	2422	45 44 14	2433
	Spica E.	60 21 40	2100	58 30 41	2111	56 39 59	2122	54 49 33	2134
	Antares E.	106 12 31	2095	104 21 24	2105	102 30 33	2116	100 39 58	2128
4	SUN W.	54 15 19	2497	55 56 37	2510	57 37 36	2525	59 18 15	2540
	Saturn W.	24 49 5	2225	26 36 56	2239	28 24 26	2253	30 11 35	2267
	Spica E.	45 42 3	2198	43 53 33	2212	42 5 24	2226	40 17 36	2241
	Antares E.	91 31 36	2190	89 42 53	2204	87 54 31	2217	86 6 29	2231
5	SUN W.	67 36 19	2616	69 14 52	2632	70 53 3	2648	72 30 53	2664
	Saturn W.	39 2 2	2341	40 47 2	2356	42 31 40	2371	44 15 56	2387
	Regulus W.	22 46 45	2309	24 32 31	2324	26 17 56	2338	28 3 0	2353
	Spica E.	31 24 16	2320	29 38 46	2337	27 53 41	2355	26 9 2	2373
	Antares E.	77 11 39	2305	75 25 47	2320	73 40 16	2335	71 55 7	2350
6	SUN W.	80 34 35	2746	82 10 14	2762	83 45 32	2779	85 20 28	2795
	Saturn W.	52 51 44	2464	54 33 48	2480	56 15 30	2495	57 56 50	2510
	Regulus W.	36 42 53	2429	38 25 47	2443	40 8 20	2459	41 50 31	2474
	Spica E.	17 32 31	2478	15 50 47	2505	14 9 40	2537	12 29 18	2577
	Antares E.	63 14 54	2427	61 31 58	2443	59 49 23	2457	58 7 9	2472
	α Aquilæ E.	113 50 4	3247	112 24 50	3243	110 59 31	3240	109 34 9	3238
7	SUN W.	93 9 56	2873	94 42 49	2890	96 15 21	2905	97 47 34	2920
	Saturn W.	66 18 16	2585	67 57 31	2600	69 36 26	2614	71 15 2	2629
	Regulus W.	50 16 12	2548	51 56 19	2562	53 36 6	2577	55 15 33	2591
	Antares E.	49 41 19	2547	48 1 11	2561	46 21 22	2575	44 41 53	2590
	α Aquilæ E.	102 27 29	3253	101 2 23	3259	99 37 24	3266	98 12 33	3275
8	SUN W.	105 23 55	2993	106 54 17	3007	108 24 21	3021	109 54 8	3034
	Saturn W.	79 23 15	2697	80 59 59	2710	82 36 26	2723	84 12 35	2735
	Regulus W.	63 28 7	2658	65 5 44	2672	66 43 2	2684	68 20 4	2696
	Antares E.	36 29 14	2657	34 51 37	2670	33 14 17	2683	31 37 15	2696
	α Aquilæ E.	91 11 7	3329	89 47 29	3342	88 24 6	3356	87 0 59	3371
	Fomalhaut E.	116 20 24	3069	114 51 37	3072	113 22 53	3074	111 54 12	3078
9	SUN W.	117 18 59	3098	118 47 11	3110	120 15 8	3123	121 42 50	3134
	Saturn W.	92 9 17	2795	93 43 51	2806	95 18 11	2818	96 52 16	2828
	Regulus W.	76 21 10	2755	77 56 37	2766	79 31 49	2777	81 6 47	2788
	Spica W.	22 24 51	2782	23 59 43	2789	25 34 25	2798	27 8 56	2806
	Antares E.	23 36 7	2755	22 0 40	2766	20 25 28	2778	18 50 31	2788
	α Aquilæ E.	80 9 49	3454	78 48 33	3472	77 27 37	3492	76 7 4	3513
	Fomalhaut E.	104 32 10	3105	103 4 7	3111	101 36 11	3119	100 8 24	3126
10	SUN W.	128 57 57	3188	130 24 20	3199	131 50 30	3209	133 16 29	3219
	Saturn W.	104 39 17	2878	106 12 4	2888	107 44 38	2898	109 17 0	2906
	Regulus W.	88 58 13	2837	90 31 53	2847	92 5 20	2856	93 38 36	2865
	Spica W.	34 58 45	2849	36 32 10	2857	38 5 24	2866	39 38 27	2874
	α Aquilæ E.	69 30 18	3629	68 12 15	3656	66 54 41	3684	65 37 37	3713
	Fomalhaut E.	92 51 49	3166	91 24 59	3176	89 58 21	3184	88 31 53	3193
	α Pegasi E.	115 1 21	3064	113 32 27	3068	112 3 38	3072	110 34 54	3076

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^a .	P.L. of diff.	XVIII ^a .	P.L. of diff.	XXI ^a .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
2	SUN W.	33 38 7	2369	35 22 26	2376	37 6 35	2384	38 50 33	2392
	Spica E.	67 48 3	2063	65 56 7	2072	64 4 24	2081	62 12 55	2090
	Antares E.	113 39 25	2058	111 47 21	2067	109 55 31	2075	108 3 54	2085
3	SUN W.	47 27 1	2445	49 9 32	2457	50 51 46	2470	52 33 42	2483
	Spica E.	52 59 25	2146	51 9 36	2158	49 20 5	2171	47 30 54	2184
	Antares E.	98 49 41	2139	96 59 41	2151	95 10 0	2164	93 20 38	2177
4	SUN W.	60 58 33	2554	62 38 31	2569	64 18 8	2585	65 57 24	2600
	Saturn W.	31 58 23	2281	33 44 50	2296	35 30 56	2311	37 16 40	2326
	Spica E.	38 30 10	2257	36 43 7	2272	34 56 26	2288	33 10 9	2304
	Antares E.	84 18 48	2246	82 31 29	2260	80 44 31	2274	78 57 54	2289
5	SUN W.	74 8 21	2680	75 45 27	2697	77 22 11	2713	78 58 34	2729
	Saturn W.	45 59 50	2403	47 43 21	2417	49 26 31	2433	51 9 19	2449
	Regulus W.	29 47 42	2368	31 32 2	2383	33 16 1	2398	34 59 38	2414
	Spica E.	24 24 48	2391	22 41 1	2410	20 57 41	2431	19 14 50	2453
	Antares E.	70 10 20	2366	68 25 56	2380	66 41 53	2396	64 58 13	2411
6	SUN W.	86 55 3	2810	88 29 18	2827	90 3 11	2842	91 36 44	2858
	Saturn W.	59 37 49	2525	61 18 27	2540	62 58 44	2556	64 38 40	2570
	Regulus W.	43 32 20	2489	45 13 49	2504	46 54 57	2518	48 35 45	2533
	Spica E.	10 49 51	2630	9 11 37	2708	- - -	- - -	- - -	- - -
	Antares E.	56 25 17	2488	54 43 47	2502	53 2 37	2517	51 21 48	2532
	α Aquilæ E.	108 8 45	2339	106 43 22	2340	105 18 0	2343	103 52 42	2347
7	SUN W.	99 19 28	2935	100 51 2	2950	102 22 18	2964	103 53 16	2979
	Saturn W.	72 53 18	2643	74 31 15	2656	76 8 54	2670	77 46 14	2684
	Regulus W.	56 54 41	2604	58 33 31	2618	60 12 1	2632	61 50 13	2645
	Antares E.	43 2 44	2603	41 23 53	2618	39 45 22	2631	38 7 9	2644
	α Aquilæ E.	96 47 53	3284	95 23 23	3294	93 59 4	3306	92 34 59	3317
8	SUN W.	111 23 39	3047	112 52 53	3060	114 21 51	3073	115 50 33	3086
	Saturn W.	85 48 28	2748	87 24 4	2760	88 59 24	2772	90 34 28	2784
	Regulus W.	69 56 49	2708	71 33 18	2720	73 9 31	2732	74 45 28	2744
	Antares E.	30 0 29	2708	28 23 59	2720	26 47 46	2732	25 11 49	2744
	α Aquilæ E.	85 38 9	3386	84 15 36	3401	82 53 21	3418	81 31 25	3436
	Fomalhaut E.	110 25 36	3082	108 57 5	3087	107 28 40	3092	106 0 21	3099
9	SUN W.	123 10 18	3145	124 37 33	3157	126 4 34	3168	127 31 22	3178
	Saturn W.	98 26 7	2839	99 59 44	2849	101 33 8	2859	103 6 19	2869
	Regulus W.	82 41 30	2798	84 16 1	2808	85 50 18	2818	87 24 22	2828
	Spica W.	28 43 16	2814	30 17 25	2823	31 51 23	2832	33 25 10	2841
	Antares E.	17 15 47	2799	15 41 18	2809	14 7 2	2820	12 33 0	2830
	α Aquilæ E.	74 46 54	3534	73 27 7	3556	72 7 45	3579	70 48 48	3604
	Fomalhaut E.	98 40 46	3134	97 13 18	3141	95 45 58	3149	94 18 48	3158
10	SUN W.	134 42 15	3228	136 7 51	3238	137 33 15	3247	138 58 28	3256
	Saturn W.	110 49 12	2915	112 21 12	2923	113 53 1	2931	115 24 40	2939
	Regulus W.	95 11 40	2873	96 44 33	2881	98 17 16	2890	99 49 48	2898
	Spica W.	41 11 19	2881	42 44 2	2890	44 16 34	2897	45 48 57	2905
	α Aquilæ E.	64 21 4	3745	63 5 4	3778	61 49 39	3812	60 34 49	3849
	Fomalhaut E.	87 5 36	3203	85 39 31	3213	84 13 37	3223	82 47 55	3233
	α Pegasi E.	109 6 15	3081	107 37 42	3086	106 9 15	3091	104 40 54	3096

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
11	Regulus W.	101 22 10	2905	102 54 22	2913	104 26 24	2920	105 58 18	2927
	Spica W.	47 21 10	2912	48 53 13	2919	50 25 8	2926	51 56 54	2933
	α Aquilæ E.	59 20 37	3887	58 7 4	3928	56 54 13	3972	55 42 5	4019
	Fomalhaut E.	81 22 25	3243	79 57 7	3254	78 32 2	3266	77 7 11	3277
	α Pegasi E.	103 12 39	3101	101 44 31	3106	100 16 29	3111	98 48 33	3117
12	Spica W.	59 33 38	2965	61 4 35	2970	62 35 25	2976	64 6 8	2982
	Antares W.	13 39 20	2961	15 10 22	2967	16 41 16	2972	18 12 4	2977
	α Aquilæ E.	49 53 53	4305	48 47 5	4376	47 41 22	4453	46 36 48	4535
	Fomalhaut E.	70 6 18	3339	68 42 52	3354	67 19 43	3368	65 56 50	3384
	α Pegasi E.	91 30 36	3146	90 3 22	3152	88 36 15	3157	87 9 15	3163
13	Spica W.	71 38 3	3006	73 8 8	3011	74 38 7	3016	76 8 0	3019
	Antares W.	25 44 25	3003	27 14 34	3007	28 44 38	3011	30 14 37	3016
	Fomalhaut E.	59 7 0	3471	57 46 3	3491	56 25 29	3513	55 5 19	3536
	α Pegasi E.	79 56 6	3195	78 29 51	3203	77 3 45	3209	75 37 46	3216
	α Arietis E.	122 14 58	3024	120 45 15	3028	119 15 37	3032	117 46 4	3035
14	Spica W.	83 36 13	3039	85 5 37	3042	86 34 58	3046	88 4 14	3048
	Antares W.	37 43 14	3035	39 12 43	3038	40 42 9	3042	42 11 30	3044
	Fomalhaut E.	48 31 26	3678	47 14 15	3714	45 57 43	3752	44 41 50	3793
	α Pegasi E.	68 30 1	3253	67 4 55	3261	65 39 58	3270	64 15 12	3279
	α Arietis E.	110 19 24	3052	108 50 16	3056	107 21 12	3059	105 52 12	3061
15	Spica W.	95 29 45	3062	96 58 41	3064	98 27 35	3065	99 56 27	3068
	Antares W.	49 37 26	3057	51 6 28	3060	52 35 27	3061	54 4 24	3063
	Fomalhaut E.	38 34 34	4070	37 24 3	4143	36 14 43	4225	35 6 41	4318
	α Pegasi E.	57 14 4	3330	55 50 27	3341	54 27 3	3354	53 3 54	3367
	α Arietis E.	98 27 59	3073	96 59 16	3076	95 30 37	3077	94 1 59	3079
16	Spica W.	107 20 18	3074	108 48 59	3074	110 17 40	3075	111 46 21	3076
	Antares W.	61 28 41	3069	62 57 28	3069	64 26 15	3070	65 55 1	3070
	α Pegasi E.	46 12 20	3450	44 51 0	3471	43 30 4	3494	42 9 33	3519
	α Arietis E.	86 39 19	3085	85 10 51	3086	83 42 24	3086	82 13 57	3087
	Aldebaran E.	118 17 39	3162	116 50 45	3160	115 23 48	3158	113 56 49	3157
17	Antares W.	73 18 53	3068	74 47 42	3067	76 16 32	3065	77 45 24	3064
	α Pegasi E.	35 34 57	3692	34 18 2	3741	33 1 58	3795	31 46 50	3857
	α Arietis E.	74 51 45	3085	73 23 17	3084	71 54 48	3083	70 26 18	3082
	Aldebaran E.	106 41 22	3147	105 14 10	3144	103 46 54	3143	102 19 36	3141
18	Antares W.	85 10 19	3052	86 39 27	3048	88 8 40	3045	89 37 57	3042
	α Aquilæ W.	42 14 22	4922	43 12 19	4815	44 11 43	4718	45 12 27	4628
	α Arietis E.	63 3 18	3072	61 34 34	3069	60 5 47	3066	58 36 56	3063
	Aldebaran E.	95 2 18	3125	93 34 39	3122	92 6 56	3118	90 39 8	3114
19	Antares W.	97 5 40	3017	98 35 32	3012	100 5 30	3006	101 35 36	2999
	α Aquilæ W.	50 33 46	4270	51 41 6	4214	52 49 19	4161	53 58 22	4110
	Fomalhaut W.	26 28 40	5565	27 18 39	5302	28 11 45	5074	29 7 43	4875
	α Arietis E.	51 11 37	3044	49 42 19	3039	48 12 54	3033	46 43 24	3030
	Aldebaran E.	83 18 55	3092	81 50 35	3087	80 22 9	3081	78 53 36	3076
20	SUN E.	131 26 5	3383	130 3 29	3376	128 40 45	3370	127 17 54	3362
	α Aquilæ W.	59 54 58	3900	61 8 18	3864	62 22 14	3830	63 36 45	3797

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11	Regulus W.	107 30 2	2934	109 1 38	2941	110 33 5	2947	112 4 24	2954
	Spica W.	53 28 31	2939	55 0 0	2946	56 31 20	2952	58 2 33	2958
	α Aquilæ E.	54 30 44	4068	53 20 11	4121	52 10 30	4178	51 1 43	4239
	Fomalhaut E.	75 42 32	3288	74 18 7	3300	72 53 56	3313	71 29 59	3326
	α Pegasi E.	97 20 44	3123	95 53 2	3128	94 25 26	3134	92 57 58	3140
12	Spica W.	65 36 43	2986	67 7 13	2992	68 37 36	2997	70 7 52	3001
	Antares W.	19 42 45	2983	21 13 19	2988	22 43 47	2993	24 14 9	2998
	α Aquilæ E.	45 33 27	4625	44 31 24	4723	43 30 44	4831	42 31 33	4947
	Fomalhaut E.	64 34 15	3399	63 11 57	3415	61 49 58	3433	60 28 19	3451
	α Pegasi E.	85 42 22	3170	84 15 37	3176	82 48 59	3183	81 22 29	3188
13	Spica W.	77 37 49	3024	79 7 32	3028	80 37 10	3031	82 6 44	3035
	Antares W.	31 44 30	3020	33 14 18	3024	34 44 1	3027	36 13 40	3031
	Fomalhaut E.	53 45 35	3561	52 26 18	3587	51 7 29	3615	49 49 11	3646
	α Pegasi E.	74 11 56	3223	72 46 14	3230	71 20 41	3237	69 55 16	3246
	α Arietis E.	116 16 35	3039	114 47 11	3043	113 17 51	3047	111 48 36	3049
14	Spica W.	89 33 27	3051	91 2 37	3054	92 31 43	3057	94 0 45	3059
	Antares W.	43 40 48	3047	45 10 3	3051	46 39 13	3053	48 8 21	3055
	Fomalhaut E.	43 26 41	3838	42 12 18	3889	40 58 47	3943	39 46 10	4003
	α Pegasi E.	62 50 36	3288	61 26 10	3298	60 1 56	3308	58 37 54	3319
	α Arietis E.	104 23 15	3064	102 54 21	3067	101 25 31	3069	99 56 43	3072
15	Spica W.	101 25 16	3069	102 54 4	3070	104 22 50	3072	105 51 34	3072
	Antares W.	55 33 19	3064	57 2 12	3066	58 31 3	3068	59 59 52	3068
	Fomalhaut E.	34 0 5	4421	32 55 3	4538	31 51 44	4670	30 50 19	4819
	α Pegasi E.	51 41 0	3381	50 18 22	3397	48 56 2	3414	47 34 1	3431
	α Arietis E.	92 33 24	3080	91 4 50	3082	89 36 18	3083	88 7 48	3084
16	Spica W.	113 15 0	3075	114 43 40	3075	116 12 20	3075	117 41 0	3074
	Antares W.	67 23 47	3070	68 52 33	3070	70 21 19	3069	71 50 6	3069
	α Pegasi E.	40 49 30	3547	39 29 58	3578	38 10 59	3612	36 52 38	3649
	α Arietis E.	80 45 31	3087	79 17 5	3087	77 48 39	3086	76 20 12	3086
	Aldebaran E.	112 29 48	3155	111 2 45	3153	109 35 40	3151	108 8 32	3149
17	Antares W.	79 14 17	3062	80 43 13	3060	82 12 12	3057	83 41 14	3055
	α Pegasi E.	30 32 47	3929	29 19 57	4011	28 8 28	4106	26 58 32	4217
	α Arietis E.	68 57 46	3081	67 29 13	3078	66 0 37	3077	64 31 59	3074
	Aldebaran E.	100 52 16	3137	99 24 51	3135	97 57 24	3132	96 29 53	3129
18	Antares W.	91 7 18	3037	92 36 45	3032	94 6 18	3028	95 35 56	3023
	α Aquilæ W.	46 14 28	4545	47 17 40	4469	48 22 0	4398	49 27 23	4332
	α Arietis E.	57 8 1	3060	55 39 2	3056	54 9 59	3052	52 40 50	3048
	Aldebaran E.	89 11 16	3110	87 43 19	3105	86 15 16	3101	84 47 8	3097
19	Antares W.	103 5 50	2992	104 36 13	2985	106 6 44	2977	107 37 25	2969
	α Aquilæ W.	55 8 14	4063	56 18 52	4019	57 30 13	3976	58 42 16	3937
	Fomalhaut W.	30 6 18	4701	31 7 17	4548	32 10 27	4413	33 15 37	4292
	α Arietis E.	45 13 48	3024	43 44 5	3019	42 14 16	3013	40 44 20	3008
	Aldebaran E.	77 24 57	3069	75 56 10	3064	74 27 16	3057	72 58 14	3051
	SUN E.	125 54 54	3355	124 31 46	3346	123 8 28	3338	121 45 1	3330
20	α Aquilæ W.	64 51 50	3766	66 7 28	3737	67 23 36	3708	68 40 15	3681

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20	Fomalhaut W.	34 22 37	4184	35 31 18	4087	36 41 33	3999	37 53 13	3919
	α Arietis E.	39 14 17	3002	37 44 7	2997	36 13 50	2991	34 43 26	2985
	Aldebaran E.	71 29 4	3043	69 59 45	3037	68 30 18	3030	67 0 43	3022
	SUN E.	120 21 24	3321	118 57 36	3312	117 33 38	3301	116 9 28	3291
21	α Aquilæ W.	69 57 22	3654	71 14 58	3628	72 33 2	3604	73 51 32	3580
	Fomalhaut W.	44 9 46	3610	45 28 10	3560	46 47 28	3514	48 7 37	3471
	Aldebaran E.	59 30 25	2985	57 59 52	2976	56 29 9	2968	54 58 16	2960
	Jupiter E.	90 23 0	2969	88 52 8	2958	87 21 3	2946	85 49 42	2933
	SUN E.	109 5 30	3235	107 40 2	3221	106 14 18	3209	104 48 20	3196
22	α Aquilæ W.	80 30 18	3472	81 51 14	3452	83 12 32	3433	84 34 11	3415
	Fomalhaut W.	54 59 44	3285	56 24 13	3252	57 49 21	3221	59 15 5	3190
	α Pegasi W.	32 43 48	3465	34 4 51	3398	35 27 10	3336	36 50 40	3279
	Aldebaran E.	47 21 24	2923	45 49 34	2916	44 17 36	2910	42 45 30	2905
	Jupiter E.	78 8 51	2866	76 35 49	2852	75 2 28	2837	73 28 48	2821
	SUN E.	97 34 20	3124	96 6 39	3109	94 38 40	3092	93 10 21	3077
23	α Aquilæ W.	91 27 29	3331	92 51 4	3317	94 14 56	3303	95 39 4	3289
	Fomalhaut W.	66 32 28	3053	68 1 35	3027	69 31 14	3002	71 1 24	2977
	α Pegasi W.	44 3 20	3051	45 32 30	3013	47 2 27	2977	48 33 9	2942
	Aldebaran E.	35 3 52	2899	33 31 32	2904	31 59 18	2912	30 27 14	2925
	Jupiter E.	65 35 26	2743	63 59 43	2726	62 23 37	2709	60 47 9	2692
	SUN E.	85 43 42	2991	84 13 18	2973	82 42 31	2955	81 11 22	2936
24	α Aquilæ W.	102 43 17	3237	104 8 43	3230	105 34 17	3224	106 59 58	3219
	Fomalhaut W.	78 39 41	2863	80 12 47	2842	81 46 21	2821	83 20 21	2800
	α Pegasi W.	56 17 2	2789	57 51 44	2761	59 27 3	2734	61 2 57	2708
	α Arietis W.	12 40 22	2831	14 14 9	2749	15 49 44	2685	17 26 45	2632
	Aldebaran E.	22 53 30	3099	21 25 19	3174	19 58 39	3276	18 33 59	3412
	Jupiter E.	52 39 1	2604	51 0 12	2587	49 20 59	2569	47 41 21	2551
	SUN E.	73 29 40	2842	71 56 7	2822	70 22 8	2803	68 47 44	2783
25	α Aquilæ W.	114 9 6	3222	115 34 49	3229	117 0 24	3238	118 25 48	3251
	Fomalhaut W.	91 16 54	2706	92 53 26	2689	94 30 21	2672	96 7 39	2657
	α Pegasi W.	69 11 0	2586	70 50 14	2563	72 30 0	2542	74 10 15	2520
	α Arietis W.	25 46 46	2454	27 29 5	2427	29 12 1	2402	30 55 33	2377
	Jupiter E.	39 17 4	2464	37 35 0	2446	35 52 31	2430	34 9 39	2414
	SUN E.	60 49 16	2685	59 12 16	2666	57 34 50	2646	55 56 58	2627
26	Fomalhaut W.	104 19 3	2590	105 58 12	2580	107 37 34	2571	109 17 9	2564
	α Pegasi W.	82 38 48	2421	84 21 53	2403	86 5 23	2386	87 49 17	2370
	α Arietis W.	39 41 31	2270	41 28 14	2251	43 15 25	2233	45 3 4	2215
	Jupiter E.	25 29 52	2344	23 44 57	2334	21 59 47	2326	20 14 25	2320
	SUN E.	47 41 9	2534	46 0 43	2516	44 19 52	2499	42 38 37	2482
27	α Pegasi W.	96 34 27	2298	98 20 29	2287	100 6 48	2276	101 53 23	2266
	α Arietis W.	54 7 48	2133	55 57 56	2118	57 48 27	2105	59 39 19	2092
	Aldebaran W.	24 5 23	2561	25 45 12	2490	27 26 40	2431	29 9 30	2380
	SUN E.	34 6 33	2403	32 23 3	2389	30 39 13	2376	28 55 4	2363
31	SUN W.	22 38 3	2317	24 23 38	2326	26 8 59	2337	27 54 5	2348
	Spica E.	51 33 50	2034	49 41 8	2044	47 48 42	2054	45 56 32	2066
	Antares E.	97 23 48	2026	95 30 55	2036	93 38 17	2046	91 45 54	2057

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20	Fomalhaut W.	39 6 14	3847	40 20 28	3780	41 35 51	3719	42 52 18	3662
	α Arietis E.	33 12 55	2980	31 42 17	2976	30 11 34	2970	28 40 44	2966
	Aldebaran E.	65 30 58	3015	64 1 4	3008	62 31 1	3000	61 0 48	2992
	Sun E.	114 45 6	3281	113 20 32	3270	111 55 45	3258	110 30 44	3247
21	α Aquilæ W.	75 10 28	3556	76 29 50	3534	77 49 36	3514	79 9 45	3492
	Fomalhaut W.	49 28 34	3430	50 50 17	3390	52 12 45	3354	53 35 54	3319
	Aldebaran E.	53 27 13	2953	51 56 1	2944	50 24 38	2937	48 53 6	2929
	Jupiter E.	84 18 5	2920	82 46 12	2908	81 14 3	2894	79 41 36	2880
	Sun E.	103 22 6	3182	101 55 35	3168	100 28 47	3154	99 1 43	3138
22	α Aquilæ W.	85 56 11	3396	87 18 32	3379	88 41 12	3363	90 4 11	3346
	Fomalhaut W.	60 41 26	3162	62 8 21	3134	63 35 50	3106	65 3 52	3079
	α Pegasi W.	38 15 16	3226	39 40 54	3178	41 7 29	3133	42 34 59	3091
	Aldebaran E.	41 13 18	2901	39 41 0	2898	38 8 39	2896	36 36 15	2897
	Jupiter E.	71 54 48	2807	70 20 29	2791	68 45 49	2775	67 10 48	2759
	Sun E.	91 41 43	3060	90 12 44	3043	88 43 24	3026	87 13 44	3009
23	α Aquilæ W.	97 3 28	3277	98 28 6	3265	99 52 58	3255	101 18 2	3246
	Fomalhaut W.	72 32 5	2954	74 3 15	2931	75 34 55	2908	77 7 4	2886
	α Pegasi W.	50 4 35	2909	51 36 42	2877	53 9 30	2847	54 42 57	2818
	Aldebaran E.	28 55 27	2942	27 24 1	2966	25 53 6	2998	24 22 51	3042
	Jupiter E.	59 10 18	2675	57 33 4	2658	55 55 27	2640	54 17 26	2622
	Sun E.	79 39 49	2918	78 7 53	2899	76 35 33	2880	75 2 49	2861
24	α Aquilæ W.	108 25 44	3216	109 51 34	3215	111 17 26	3215	112 43 17	3217
	Fomalhaut W.	84 54 49	2781	86 20 42	2761	88 5 1	2742	89 40 45	2723
	α Pegasi W.	62 39 27	2683	64 16 30	2657	65 54 8	2633	67 32 18	2610
	α Arietis W.	19 4 57	2587	20 44 10	2548	22 24 16	2514	24 5 9	2483
	Aldebaran E.	17 11 56	3596	15 53 17	3851	14 39 7	4209	13 30 49	4724
	Jupiter E.	46 1 19	2533	44 20 52	2515	42 40 0	2498	40 58 44	2481
	Sun E.	67 12 54	2763	65 37 38	2744	64 1 57	2724	62 25 49	2705
25	α Aquilæ W.	119 50 57	3267	121 15 47	3286	122 40 15	3310	124 4 15	3338
	Fomalhaut W.	97 45 17	2641	99 23 16	2627	101 1 34	2614	102 40 10	2602
	α Pegasi W.	75 51 1	2499	77 32 15	2478	79 13 59	2459	80 56 10	2440
	α Arietis W.	32 39 40	2354	34 24 21	2333	36 9 33	2311	37 55 17	2290
	Jupiter E.	32 26 25	2398	30 42 48	2383	28 58 49	2369	27 14 30	2356
	Sun E.	54 18 40	2608	52 39 56	2589	51 0 46	2570	49 21 10	2552
26	Fomalhaut W.	110 56 54	2557	112 36 48	2552	114 16 49	2548	115 56 56	2546
	α Pegasi W.	89 33 35	2354	91 18 17	2339	93 3 20	2324	94 48 44	2311
	α Arietis W.	46 51 10	2197	48 39 42	2180	50 28 40	2164	52 18 2	2148
	Jupiter E.	18 28 55	2319	16 43 23	2324	14 57 58	2337	13 12 52	2363
	Sun E.	40 56 58	2465	39 14 55	2449	37 32 30	2433	35 49 42	2418
27	α Pegasi W.	103 40 12	2258	105 27 13	2250	107 14 26	2244	109 1 48	2238
	α Arietis W.	61 30 31	2079	63 12 2	2068	65 13 51	2056	67 5 58	2046
	Aldebaran W.	30 53 33	2337	32 38 39	2299	34 24 40	2265	36 11 31	2236
	Sun E.	27 10 36	2351	25 25 51	2340	23 40 50	2330	21 55 34	2321
31	Sun W.	29 38 55	2360	31 23 28	2373	33 7 42	2385	34 51 38	2399
	Spica E.	44 4 41	2078	42 13 8	2091	40 21 55	2104	38 31 2	2119
	Antares E.	89 53 49	2069	88 2 21	2081	86 10 33	2094	84 19 24	2107

CONFIGURATIONS OF THE SATELLITES OF JUPITER,

At 16^h, MEAN TIME.

Day of the Month.	West.	East.
<p>The SATELLITES are not visible until the 21ST day of this Month, JUPITER being too near to the SUN.</p>		
21		○ ·1 3· ·2 4
22	3· 1·	○ 2· 4
23	·3 2·	○ 1· 4·
24	·2 ● ·3 ·1	○ 4·
25	·3 ●	○ 1· 4· 2·
26		·4· ○ ·3
27	4· ·2	○ 1· 3·
28	4·	○ ·1 ·3
29	4· 3· 1·	○ 2·
30	·4 3· 2·	○ ·1
31	·4 ·3 ·1 ·2	○

This Table represents, at 16^h after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0°.449625. Days.	From Mean Noon of January 1.	
	At Mean Midnight, Logarithm of						Day of the Year.	Fraction of the Year.*
	A	B	C	D				
1	+0.4928	-1.3045	+9.8521	-0.8308	17 21 6.42	100	181	.4956
2	0.5337	1.3033	9.8544	0.8309	17 17 10.51	101	182	.4983
3	0.5710	1.3019	9.8567	0.8310	17 13 14.60	102	183	.5010
4	+0.6052	-1.3003	+9.8589	-0.8312	17 9 18.68	103	184	.5038
5	0.6369	1.2987	9.8612	0.8313	17 5 22.77	104	185	.5065
6	0.6662	1.2969	9.8634	0.8316	17 1 26.86	105	186	.5093
7	+0.6936	-1.2950	+9.8656	-0.8318	16 57 30.95	106	187	.5120
8	0.7192	1.2930	9.8678	0.8321	16 53 35.03	107	188	.5147
9	0.7433	1.2908	9.8699	0.8324	16 49 39.12	108	189	.5175
10	+0.7661	-1.2885	+9.8721	-0.8328	16 45 43.21	109	190	.5202
11	0.7875	1.2861	9.8742	0.8331	16 41 47.30	110	191	.5229
12	0.8079	1.2835	9.8763	0.8336	16 37 51.38	111	192	.5257
13	+0.8272	-1.2808	+9.8784	-0.8340	16 33 55.47	112	193	.5284
14	0.8456	1.2779	9.8805	0.8345	16 29 59.56	113	194	.5312
15	0.8631	1.2750	9.8825	0.8350	16 26 3.65	114	195	.5339
16	+0.8799	-1.2718	+9.8845	-0.8355	16 22 7.74	115	196	.5366
17	0.8958	1.2686	9.8865	0.8361	16 18 11.82	116	197	.5394
18	0.9112	1.2652	9.8885	0.8366	16 14 15.91	117	198	.5421
19	+0.9258	-1.2616	+9.8905	-0.8372	16 10 20.00	118	199	.5448
20	0.9399	1.2579	9.8924	0.8378	16 6 24.09	119	200	.5476
21	0.9535	1.2540	9.8943	0.8385	16 2 28.18	120	201	.5503
22	+0.9665	-1.2500	+9.8962	-0.8391	15 58 32.26	121	202	.5531
23	0.9790	1.2458	9.8981	0.8398	15 54 36.35	122	203	.5558
24	0.9910	1.2414	9.8999	0.8405	15 50 40.44	123	204	.5585
25	+1.0026	-1.2369	+9.9018	-0.8412	15 46 44.53	124	205	.5613
26	1.0138	1.2322	9.9036	0.8419	15 42 48.62	125	206	.5640
27	1.0246	1.2274	9.9054	0.8426	15 38 52.71	126	207	.5667
28	+1.0351	-1.2223	+9.9071	-0.8434	15 34 56.80	127	208	.5695
29	1.0451	1.2171	9.9089	0.8442	15 31 0.89	128	209	.5722
30	1.0548	1.2117	9.9106	0.8449	15 27 4.97	129	210	.5750
31	1.0642	1.2061	9.9123	0.8457	15 23 9.06	130	211	.5777
32	+1.0733	-1.2002	+9.9140	-0.8465	15 19 13.15	131	212	.5804

* Add .0017 if Fraction be required for the time *t*, see page 363.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to <i>subt. from Apparent Time.</i>	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Mon.	1	^h 8 ^m 44 ^s 21.37	9.710	N. 18° 6' 42".6	37.95	^m 6.66	^m 6 4.54	0.147
Tues.	2	8 48 14.40	9.684	17 51 31.9	38.68	6.58	6 1.01	0.173
Wed.	3	8 52 6.80	9.658	17 36 3.7	39.39	6.49	5 56.87	0.198
Thur.	4	8 55 58.59	9.632	17 20 18.4	40.09	6.40	5 52.12	0.224
Frid.	5	8 59 49.76	9.606	17 4 16.3	40.77	6.32	5 46.75	0.250
Sat.	6	9 3 40.31	9.580	16 47 57.8	41.45	6.23	5 40.75	0.275
Sun.	7	9 7 30.24	9.555	16 31 23.1	42.11	6.15	5 34.14	0.300
Mon.	8	9 11 19.57	9.530	16 14 32.4	42.76	6.06	5 26.93	0.325
Tues.	9	9 15 8.29	9.505	15 57 26.2	43.40	5.98	5 19.12	0.350
Wed.	10	9 18 56.41	9.481	15 40 4.7	44.02	5.90	5 10.71	0.374
Thur.	11	9 22 43.95	9.457	15 22 28.2	44.63	5.81	5 1.72	0.398
Frid.	12	9 26 30.92	9.433	15 4 37.0	45.23	5.73	4 52.16	0.422
Sat.	13	9 30 17.32	9.410	14 46 31.4	45.83	5.65	4 42.03	0.445
Sun.	14	9 34 3.17	9.388	14 28 11.6	46.41	5.57	4 31.35	0.467
Mon.	15	9 37 48.47	9.366	14 9 38.0	46.97	5.49	4 20.13	0.489
Tues.	16	9 41 33.25	9.345	13 50 50.8	47.52	5.42	4 8.40	0.510
Wed.	17	9 45 17.52	9.324	13 31 50.3	48.06	5.34	3 56.14	0.531
Thur.	18	9 49 1.29	9.304	13 12 36.9	48.59	5.26	3 43.39	0.551
Frid.	19	9 52 44.57	9.284	12 53 10.7	49.10	5.19	3 30.15	0.571
Sat.	20	9 56 27.38	9.264	12 33 32.2	49.60	5.12	3 16.44	0.590
Sun.	21	10 0 9.72	9.245	12 13 41.6	50.10	5.05	3 2.26	0.609
Mon.	22	10 3 51.61	9.227	11 53 39.3	50.58	4.98	2 47.64	0.627
Tues.	23	10 7 33.07	9.210	11 33 25.5	51.04	4.91	2 32.58	0.645
Wed.	24	10 11 14.10	9.193	11 13 0.5	51.49	4.85	2 17.10	0.662
Thur.	25	10 14 54.72	9.176	10 52 24.8	51.92	4.79	2 1.22	0.679
Frid.	26	10 18 34.94	9.160	10 31 38.7	52.34	4.73	1 44.93	0.695
Sat.	27	10 22 14.77	9.144	10 10 42.5	52.75	4.67	1 28.24	0.711
Sun.	28	10 25 54.22	9.128	9 49 36.5	53.14	4.61	1 11.18	0.726
Mon.	29	10 29 33.30	9.113	9 28 21.2	53.52	4.56	0 53.76	0.741
Tues.	30	10 33 12.02	9.099	9 6 56.8	53.88	4.51	0 35.97	0.755
Wed.	31	10 36 50.40	9.085	8 45 23.7	54.23	4.46	0 17.86	0.769
Thur.	32	10 40 28.45		N. 8 23 42.3		4.42	0 0.60	

* Mean Time of the Semidiameter passing may be found by subtracting 0^h 18 from the *Sidereal Time*.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be <i>subt. from</i> added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
Mon.	1	^h 8 ^m 44 ^s 20·39	N. 18° 6' 46·5"	15' 47·8"	^m 6 ^s 4·55	^h 8 ^m 38 ^s 15·84
Tues.	2	8 48 13·43	17 51 35·8	15 48·0	6 1·03	8 42 12·40
Wed.	3	8 52 5·85	17 36 7·6	15 48·1	5 56·89	8 46 8·96
Thur.	4	8 55 57·65	17 20 22·4	15 48·2	5 52·14	8 50 5·51
Frid.	5	8 59 48·84	17 4 20·3	15 48·4	5 46·77	8 54 2·07
Sat.	6	9 3 39·40	16 48 1·7	15 48·5	5 40·78	8 57 58·62
Sun.	7	9 7 29·35	16 31 27·0	15 48·7	5 34·17	9 1 55·18
Mon.	8	9 11 18·70	16 14 36·3	15 48·8	5 26·96	9 5 51·74
Tues.	9	9 15 7·44	15 57 30·0	15 49·0	5 19·15	9 9 48·29
Wed.	10	9 18 55·59	15 40 8·5	15 49·1	5 10·74	9 13 44·85
Thur.	11	9 22 43·16	15 22 31·9	15 49·3	5 1·75	9 17 41·41
Frid.	12	9 26 30·15	15 4 40·7	15 49·5	4 52·19	9 21 37·96
Sat.	13	9 30 16·58	14 46 34·9	15 49·6	4 42·06	9 25 34·52
Sun.	14	9 34 2·46	14 28 15·1	15 49·8	4 31·39	9 29 31·07
Mon.	15	9 37 47·80	14 9 41·4	15 50·0	4 20·17	9 33 27·63
Tues.	16	9 41 32·61	13 50 54·1	15 50·2	4 8·43	9 37 24·18
Wed.	17	9 45 16·91	13 31 53·5	15 50·4	3 56·17	9 41 20·74
Thur.	18	9 49 0·71	13 12 39·9	15 50·6	3 43·42	9 45 17·29
Frid.	19	9 52 44·03	12 53 13·6	15 50·8	3 30·18	9 49 13·85
Sat.	20	9 56 26·87	12 33 34·9	15 51·0	3 16·47	9 53 10·40
Sun.	21	10 0 9·25	12 13 44·2	15 51·1	3 2·29	9 57 6·96
Mon.	22	10 3 51·18	11 53 41·6	15 51·3	2 47·67	10 1 3·51
Tues.	23	10 7 32·68	11 33 27·6	15 51·5	2 32·61	10 5 0·07
Wed.	24	10 11 13·75	11 13 2·5	15 51·7	2 17·13	10 8 56·62
Thur.	25	10 14 54·42	10 52 26·6	15 52·0	2 1·24	10 12 53·18
Frid.	26	10 18 34·68	10 31 40·2	15 52·2	1 44·95	10 16 49·73
Sat.	27	10 22 14·55	10 10 43·8	15 52·4	1 28·26	10 20 46·29
Sun.	28	10 25 54·04	9 49 37·6	15 52·6	1 11·20	10 24 42·84
Mon.	29	10 29 33·16	9 28 22·0	15 52·8	0 53·77	10 28 39·40
Tues.	30	10 33 11·93	9 6 57·4	15 53·0	0 35·98	10 32 35·95
Wed.	31	10 36 50·36	8 45 24·0	15 53·3	0 17·86	10 36 32·50
Thur.	32	10 40 28·46	N. 8 23 42·3	15 53·5	0 0·60	10 40 29·06

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	128° 39' 13" 2	S. 0° 44'	0.0063579	16° 29' 9"	16° 23' 6"	60' 24" 4	60' 1' 5"
2	129 36 40.4	0.57	0.0062973	16 16.8	16 9.5	59 36.5	59 9.8
3	130 34 8.4	0.68	0.0062345	16 1.9	15 54.3	58 42.1	58 14.2
4	131 31 37.1	0.76	0.0061696	15 46.7	15 39.4	57 46.5	57 19.5
5	132 29 6.6	0.82	0.0061027	15 32.3	15 25.6	56 53.7	56 29.2
6	133 26 36.7	0.86	0.0060339	15 19.4	15 13.7	56 6.4	55 45.5
7	134 24 7.6	0.86	0.0059634	15 8.5	15 3.9	55 26.5	55 9.5
8	135 21 39.4	0.83	0.0058913	14 59.7	14 56.2	54 54.4	54 41.3
9	136 19 12.0	0.78	0.0058177	14 53.1	14 50.5	54 30.0	54 20.7
10	137 16 45.6	0.69	0.0057428	14 48.5	14 46.9	54 13.2	54 7.3
11	138 14 20.1	0.59	0.0056667	14 45.7	14 44.9	54 3.0	54 0.1
12	139 11 55.7	0.47	0.0055895	14 44.6	14 44.6	53 58.8	53 58.8
13	140 9 32.4	0.34	0.0055113	14 44.9	14 45.7	54 0.2	54 2.9
14	141 7 10.4	0.21	0.0054321	14 46.8	14 48.2	54 6.9	54 12.2
15	142 4 49.7	S. 0° 09'	0.0053519	14 50.0	14 52.2	54 18.8	54 26.8
16	143 2 30.3	N. 0° 02'	0.0052705	14 54.8	14 57.7	54 36.1	54 46.8
17	144 0 12.5	0.12	0.0051881	15 1.0	15 4.8	54 59.0	55 12.7
18	144 57 56.3	0.19	0.0051047	15 8.9	15 13.5	55 28.0	55 44.8
19	145 55 41.7	0.23	0.0050201	15 18.5	15 24.0	56 3.2	56 23.2
20	146 53 28.8	0.24	0.0049341	15 29.9	15 36.3	56 44.6	57 7.4
21	147 51 17.5	0.23	0.0048468	15 42.6	15 49.4	57 31.3	57 56.1
22	148 49 8.0	0.17	0.0047580	15 56.3	16 3.3	58 21.5	58 47.0
23	149 47 0.2	N. 0° 10'	0.0046677	16 10.2	16 16.8	59 12.2	59 36.5
24	150 44 54.2	0.00	0.0045756	16 23.0	16 28.7	59 59.3	60 20.0
25	151 42 50.0	S. 0° 12'	0.0044818	16 33.6	16 37.6	60 38.0	60 52.6
26	152 40 47.5	0.25	0.0043862	16 40.5	16 42.2	61 3.3	61 9.6
27	153 38 46.6	0.39	0.0042887	16 42.7	16 41.8	61 11.4	61 8.2
28	154 36 47.4	0.53	0.0041895	16 39.7	16 36.3	61 0.5	60 48.0
29	155 34 49.8	0.65	0.0040885	16 31.8	16 26.3	60 31.5	60 11.3
30	156 32 53.7	0.76	0.0039855	16 20.0	16 13.0	59 48.1	59 22.5
31	157 30 59.2	0.85	0.0038807	16 5.5	15 57.8	58 55.2	58 26.9
32	158 29 6.2	S. 0° 91'	0.0037744	15 50.0	15 42.2	57 58.3	57 30.0

MEAN TIME.

THE MOON'S

Day of the Week.	Day of the Month.	Longitude.		Latitude.		Age.	Meridian
						Noon.	Passage.
		Noon.	Midnight.	Noon.	Midnight.		
		[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	^d	^h ^m
Mon.	1	165 10 56.3	172 29 36.3	S. 2 13 47.7	S. 2 49 22.0	2.6	2 28.7
Tues.	2	179 42 31.1	186 49 16.7	3 21 45.2	3 50 32.1	3.6	3 17.8
Wed.	3	193 49 39.4	200 43 34.2	4 15 24.7	4 36 10.6	4.6	4 6.0
Thur.	4	207 31 4.1	214 12 18.7	4 52 42.5	5 4 59.7	5.6	4 54.5
Frid.	5	220 47 33.3	227 17 7.5	5 13 3.2	5 16 58.3	6.6	5 44.1
Sat.	6	233 41 24.4	240 0 48.6	5 16 52.2	5 12 54.7	7.6	6 35.2
Sun.	7	246 15 47.1	252 26 47.0	5 5 16.7	4 54 9.9	8.6	7 27.5
Mon.	8	258 34 15.6	264 38 39.8	4 39 47.2	4 22 22.7	9.6	8 20.3
Tues.	9	270 40 25.7	276 39 58.3	4 2 10.3	3 39 25.3	10.6	9 12.3
Wed.	10	282 37 41.8	288 33 58.6	3 14 23.4	2 47 21.1	11.6	10 2.5
Thur.	11	294 29 10.3	300 23 37.2	2 18 35.1	1 48 23.3	12.6	10 50.2
Frid.	12	306 17 38.2	312 11 31.6	1 17 3.6	S. 0 44 54.4	13.6	11 35.2
Sat.	13	318 5 35.1	324 0 5.9	S. 0 12 15.8	N. 0 20 33.7	14.6	12 17.8
Sun.	14	329 55 20.6	335 51 35.9	N. 0 53 13.6	1 25 24.5	15.6	12 58.6
Mon.	15	341 49 9.0	347 48 16.6	1 56 45.8	2 26 58.3	16.6	13 38.5
Tues.	16	353 49 17.0	359 52 29.1	2 55 42.4	3 22 37.8	17.6	14 18.6
Wed.	17	5 58 12.1	12 6 46.2	3 47 26.3	4 9 49.5	18.6	14 59.8
Thur.	18	18 18 32.5	24 33 52.4	4 29 29.4	4 46 8.4	19.6	15 43.3
Frid.	19	30 53 8.3	37 16 41.9	4 59 30.5	5 9 19.9	20.6	16 30.2
Sat.	20	43 44 54.7	50 18 6.7	5 15 22.4	5 17 24.8	21.6	17 21.6
Sun.	21	56 56 36.3	63 40 38.9	5 15 16.4	5 8 48.3	22.6	18 17.9
Mon.	22	70 30 26.4	77 26 5.4	4 57 54.7	4 42 33.6	23.6	19 18.4
Tues.	23	84 27 37.2	91 34 55.6	4 22 46.7	3 58 42.5	24.6	20 21.2
Wed.	24	98 47 47.3	106 5 49.7	3 30 33.0	2 58 38.9	25.6	21 23.8
Thur.	25	113 28 31.2	120 55 11.0	2 23 26.7	1 45 29.9	26.6	22 24.0
Frid.	26	128 24 59.7	135 57 0.6	N. 1 5 28.6	N. 0 24 7.5	27.6	23 20.7
Sat.	27	143 30 10.1	151 3 21.1	S. 0 17 44.4	S. 0 59 17.0	28.6	6
Sun.	28	158 35 24.9	166 5 13.5	1 39 39.7	2 18 5.5	0.3	0 14.1
Mon.	29	173 31 43.1	180 53 55.1	2 53 51.6	3 26 20.9	1.3	1 5.2
Tues.	30	188 10 59.6	195 22 15.9	3 55 4.5	4 19 40.1	2.3	1 55.1
Wed.	31	202 27 13.1	209 25 31.3	4 39 53.2	4 55 36.7	3.3	2 44.9
Thur.	32	216 17 0.4	223 1 40.3	S. 5 6 48.5	S. 5 13 33.1	4.3	3 35.6

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 1.				WEDNESDAY 3.			
0	h m s	° ' "	"	0	h m s	° ' "	"
1	11 1 58.81	N. 3 47 12.1	170.21	1	12 44 11.83	S. 9 22 47.0	153.00
2	11 4 9.87	3 30 10.8	170.22	2	12 46 18.12	9 38 5.0	152.31
3	11 6 20.70	3 13 9.5	170.21	3	12 48 24.43	9 53 18.9	151.61
4	11 8 31.33	2 56 8.2	170.18	4	12 50 30.75	10 8 28.6	150.90
5	11 10 41.74	2 39 7.1	170.14	5	12 52 37.11	10 23 34.0	150.18
6	11 12 51.95	2 22 6.2	170.08	6	12 54 43.49	10 38 35.1	149.44
7	11 15 1.96	2 5 5.7	170.00	7	12 56 49.90	10 53 31.8	148.70
8	11 17 11.78	1 48 5.7	169.90	8	12 58 56.35	11 8 24.0	147.94
9	11 19 21.41	1 31 6.2	169.79	9	13 1 2.84	11 23 11.7	147.17
10	11 21 30.86	1 14 7.4	169.66	10	13 3 9.37	11 37 54.8	146.40
11	11 23 40.13	0 57 9.5	169.51	11	13 5 15.95	11 52 33.2	145.61
12	11 25 49.23	0 40 12.4	169.35	12	13 7 22.58	12 7 6.8	144.81
13	11 27 58.17	0 23 16.2	169.17	13	13 9 29.27	12 21 35.7	143.99
14	11 30 6.95	N. 0 6 21.1	168.98	14	13 11 36.01	12 35 59.7	143.17
15	11 32 15.57	S. 0 10 32.8	168.76	15	13 13 42.82	12 50 18.8	142.34
16	11 34 24.04	0 27 25.4	168.54	16	13 15 49.69	13 4 32.9	141.50
17	11 36 32.36	0 44 16.6	168.29	17	13 17 56.63	13 18 41.9	140.65
18	11 38 40.54	1 1 6.4	168.03	18	13 20 3.65	13 32 45.9	139.79
19	11 40 48.59	1 17 54.6	167.76	19	13 22 10.74	13 46 44.7	138.92
20	11 42 56.51	1 34 41.2	167.47	20	13 24 17.92	14 0 38.2	138.04
21	11 45 4.30	1 51 26.1	167.16	21	13 26 25.18	14 14 26.5	137.15
22	11 47 11.97	2 8 9.1	166.84	22	13 28 32.52	14 28 9.5	136.25
23	11 49 19.53	2 24 50.2	166.51	23	13 30 39.96	14 41 47.0	135.35
24	11 51 26.97	S. 2 41 29.2	166.16	24	13 32 47.48	S. 14 55 19.1	134.43
TUESDAY 2.				THURSDAY 4.			
0	h m s	° ' "	"	0	h m s	° ' "	"
1	11 53 34.31	S. 2 58 6.2	165.79	1	13 34 55.11	S. 15 8 45.7	133.50
2	11 55 41.55	3 14 41.0	165.41	2	13 37 2.82	15 22 6.8	132.57
3	11 57 48.70	3 31 13.5	165.02	3	13 39 10.63	15 35 22.2	131.62
4	11 59 55.76	3 47 43.6	164.61	4	13 41 18.54	15 48 31.9	130.67
5	12 2 2.73	4 4 11.3	164.19	5	13 43 26.56	16 1 35.9	129.70
6	12 4 9.62	4 20 36.4	163.75	6	13 45 34.68	16 14 34.2	128.73
7	12 6 16.44	4 36 59.0	163.30	7	13 47 42.92	16 27 26.6	127.74
8	12 8 23.19	4 53 18.8	162.84	8	13 49 51.27	16 40 13.1	126.75
9	12 10 29.87	5 9 35.9	162.36	9	13 51 59.73	16 52 53.6	125.75
10	12 12 36.50	5 25 50.1	161.87	10	13 54 8.31	17 5 28.1	124.74
11	12 14 43.07	5 42 1.3	161.37	11	13 56 17.01	17 17 56.6	123.72
12	12 16 49.58	5 58 9.5	160.85	12	13 58 25.83	17 30 19.0	122.70
13	12 18 56.05	6 14 14.7	160.32	13	14 0 34.77	17 42 35.2	121.66
14	12 21 2.48	6 30 16.7	159.78	14	14 2 43.84	17 54 45.2	120.61
15	12 23 8.88	6 46 15.4	159.23	15	14 4 53.03	18 6 48.9	119.56
16	12 25 15.24	7 2 10.8	158.66	16	14 7 2.35	18 18 46.3	118.50
17	12 27 21.58	7 18 2.7	158.08	17	14 9 11.81	18 30 37.3	117.43
18	12 29 27.90	7 33 51.2	157.48	18	14 11 21.39	18 42 21.9	116.35
19	12 31 34.19	7 49 36.2	156.88	19	14 13 31.11	18 54 0.1	115.27
20	12 33 40.48	8 5 17.5	156.26	20	14 15 40.97	19 5 31.8	114.17
21	12 35 46.75	8 20 55.1	155.63	21	14 17 50.96	19 16 56.8	113.07
22	12 37 53.02	8 36 28.9	154.99	22	14 20 1.08	19 28 15.3	111.96
23	12 39 59.29	8 51 58.9	154.34	23	14 22 11.35	19 39 27.1	110.85
24	12 42 5.55	9 7 24.9	153.67	24	14 24 21.76	19 50 32.2	109.72
	12 44 11.83	S. 9 22 47.0			14 26 32.30	S. 20 1 30.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 5.				SUNDAY 7.			
0	^h 14 ^m 26 ^s 32.30	S. 20° 1' 30".6	108".59	0	^h 16 ^m 13 ^s 39.03	S. 26° 22' 52".8	46".96
1	14 28 42.99	20 12 22.2	107".45	1	16 15 55.67	26 27 34.6	45".56
2	14 30 53.81	20 23 6.9	106".30	2	16 18 12.38	26 32 8.0	44".17
3	14 33 4.78	20 33 44.8	105".15	3	16 20 29.15	26 36 33.0	42".77
4	14 35 15.90	20 44 15.7	103".99	4	16 22 45.98	26 40 49.6	41".37
5	14 37 27.16	20 54 39.6	102".82	5	16 25 2.88	26 44 57.8	39".96
6	14 39 38.56	21 4 56.5	101".64	6	16 27 19.82	26 48 57.6	38".56
7	14 41 50.11	21 15 6.4	100".45	7	16 29 36.81	26 52 49.0	37".15
8	14 44 1.80	21 25 9.2	99".26	8	16 31 53.85	26 56 32.0	35".74
9	14 46 13.64	21 35 4.8	98".07	9	16 34 10.93	27 0 6.5	34".33
10	14 48 25.62	21 44 53.2	96".86	10	16 36 28.05	27 3 32.5	32".92
11	14 50 37.75	21 54 34.4	95".65	11	16 38 45.19	27 6 50.1	31".51
12	14 52 50.03	22 4 8.3	94".43	12	16 41 2.37	27 9 59.2	30".10
13	14 55 2.45	22 13 34.9	93".21	13	16 43 19.58	27 12 59.8	28".68
14	14 57 15.01	22 22 54.2	91".97	14	16 45 36.80	27 15 51.9	27".27
15	14 59 27.72	22 32 6.1	90".74	15	16 47 54.04	27 18 35.6	25".85
16	15 1 40.57	22 41 10.5	89".50	16	16 50 11.29	27 21 10.7	24".44
17	15 3 53.56	22 50 7.5	88".24	17	16 52 28.55	27 23 37.4	23".02
18	15 6 6.70	22 58 57.0	86".99	18	16 54 45.81	27 25 55.6	21".61
19	15 8 19.97	23 7 38.9	85".72	19	16 57 3.07	27 28 5.2	20".19
20	15 10 33.39	23 16 13.3	84".45	20	16 59 20.32	27 30 6.4	18".77
21	15 12 46.95	23 24 40.0	83".18	21	17 1 37.56	27 31 59.1	17".36
22	15 15 0.64	23 32 59.1	81".90	22	17 3 54.79	27 33 43.3	15".94
23	15 17 14.47	S. 23° 41' 10".6	80".62	23	17 6 11.99	S. 27° 35' 19".0	14".53
SATURDAY 6.				MONDAY 8.			
0	15 19 28.43	S. 23° 49' 14".3	79".33	0	17 8 29.17	S. 27° 36' 46".2	13".12
1	15 21 42.53	23 57 10.3	78".03	1	17 10 46.32	27 38 4.9	11".71
2	15 23 56.76	24 4 58.5	76".73	2	17 13 3.44	27 39 15.2	10".29
3	15 26 11.12	24 12 38.9	75".42	3	17 15 20.51	27 40 17.0	8".88
4	15 28 25.61	24 20 11.4	74".11	4	17 17 37.54	27 41 10.3	7".48
5	15 30 40.22	24 27 36.1	72".79	5	17 19 54.52	27 41 55.2	6".07
6	15 32 54.97	24 34 52.9	71".47	6	17 22 11.45	27 42 31.7	4".66
7	15 35 9.83	24 42 1.7	70".14	7	17 24 28.32	27 42 59.7	3".26
8	15 37 24.82	24 49 2.6	68".81	8	17 26 45.13	27 43 19.2	1".86
9	15 39 39.92	24 55 55.5	67".47	9	17 29 1.88	27 43 30.4	0".46
10	15 41 55.15	25 2 40.3	66".13	10	17 31 18.55	27 43 33.2	0".93
11	15 44 10.48	25 9 17.1	64".79	11	17 33 35.14	27 43 27.5	2".33
12	15 46 25.93	25 15 45.9	63".44	12	17 35 51.66	27 43 13.5	3".73
13	15 48 41.49	25 22 6.6	62".08	13	17 38 8.09	27 42 51.1	5".12
14	15 50 57.16	25 28 19.1	60".73	14	17 40 24.43	27 42 20.4	6".50
15	15 53 12.93	25 34 23.5	59".36	15	17 42 40.67	27 41 41.3	7".89
16	15 55 28.80	25 40 19.7	58".00	16	17 44 56.82	27 40 54.0	9".27
17	15 57 44.77	25 46 7.7	56".63	17	17 47 12.86	27 39 58.4	10".65
18	16 0 0.83	25 51 47.5	55".26	18	17 49 28.79	27 38 54.5	12".02
19	16 2 16.99	25 57 19.1	53".88	19	17 51 44.60	27 37 42.3	13".39
20	16 4 33.23	26 2 42.4	52".50	20	17 54 0.30	27 36 21.9	14".76
21	16 6 49.56	26 7 57.5	51".12	21	17 56 15.88	27 34 53.3	16".12
22	16 9 5.98	26 13 4.2	49".74	22	17 58 31.34	27 33 16.6	17".48
23	16 11 22.47	26 18 2.7	48".35	23	18 0 46.66	27 31 31.7	18".84
24	16 13 39.03	S. 26° 22' 52".8		24	18 3 1.85	S. 27° 29' 38".6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 9.				THURSDAY 11.			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	18 3 1'85	S. 27 29 38'6	20'19	0	19 47 23'76	S. 23 30 50'7	77'87
1	18 5 16'90	27 27 37'5	21'53	1	19 49 28'46	23 23 3'5	78'89
2	18 7 31'80	27 25 28'3	22'87	2	19 51 32'89	23 15 10'1	79'90
3	18 9 46'56	27 23 11'0	24'21	3	19 53 37'07	23 7 10'6	80'90
4	18 12 1'16	27 20 45'7	25'54	4	19 55 40'98	22 59 5'2	81'90
5	18 14 15'61	27 18 12'4	26'87	5	19 57 44'64	22 50 53'8	82'88
6	18 16 29'90	27 15 31'2	28'19	6	19 59 48'03	22 42 36'5	83'86
7	18 18 44'02	27 12 42'0	29'51	7	20 1 51'17	22 34 13'3	84'83
8	18 20 57'98	27 9 44'9	30'82	8	20 3 54'04	22 25 44'3	85'79
9	18 23 11'77	27 6 39'9	32'13	9	20 5 56'65	22 17 9'6	86'74
10	18 25 25'38	27 3 27'1	33'43	10	20 7 59'00	22 8 29'1	87'68
11	18 27 38'82	27 0 6'5	34'73	11	20 10 1'09	21 59 43'0	88'61
12	18 29 52'07	26 56 38'1	36'02	12	20 12 2'92	21 50 51'3	89'54
13	18 32 5'14	26 53 2'0	37'30	13	20 14 4'49	21 41 54'0	90'45
14	18 34 18'02	26 49 18'1	38'58	14	20 16 5'81	21 32 51'3	91'36
15	18 36 30'71	26 45 26'6	39'85	15	20 18 6'86	21 23 43'1	92'26
16	18 38 43'20	26 41 27'4	41'12	16	20 20 7'66	21 14 29'5	93'15
17	18 40 55'49	26 37 20'7	42'38	17	20 22 8'20	21 5 10'5	94'04
18	18 43 7'58	26 33 6'4	43'63	18	20 24 8'48	20 55 46'3	94'91
19	18 45 19'46	26 28 44'5	44'88	19	20 26 8'51	20 46 16'8	95'78
20	18 47 31'14	26 24 15'2	46'12	20	20 28 8'28	20 36 42'1	96'63
21	18 49 42'60	26 19 38'5	47'35	21	20 30 7'80	20 27 2'3	97'48
22	18 51 53'85	26 14 54'3	48'58	22	20 32 7'06	20 17 17'4	98'32
23	18 54 4'88	S. 26 10 2'8	49'80	23	20 34 6'08	S. 20 7 27'4	99'15
WEDNESDAY 10.				FRIDAY 12.			
0	18 56 15'69	S. 26 5 4'0	51'01	0	20 36 4'85	S. 19 57 32'5	99'97
1	18 58 26'28	25 59 57'9	52'22	1	20 38 3'37	19 47 32'6	100'79
2	19 0 36'64	25 54 44'6	53'41	2	20 40 1'64	19 37 27'9	101'59
3	19 2 46'78	25 49 24'1	54'61	3	20 41 59'66	19 27 18'3	102'39
4	19 4 56'69	25 43 56'4	55'79	4	20 43 57'44	19 17 3'9	103'17
5	19 7 6'36	25 38 21'6	56'97	5	20 45 54'97	19 6 44'9	103'95
6	19 9 15'80	25 32 39'8	58'14	6	20 47 52'27	18 56 21'1	104'72
7	19 11 25'01	25 26 50'9	59'30	7	20 49 49'32	18 45 52'7	105'48
8	19 13 33'98	25 20 55'1	60'46	8	20 51 46'13	18 35 19'8	106'24
9	19 15 42'70	25 14 52'3	61'60	9	20 53 42'71	18 24 42'4	106'98
10	19 17 51'19	25 8 42'7	62'74	10	20 55 39'05	18 14 0'5	107'71
11	19 19 59'43	25 2 26'2	63'88	11	20 57 35'16	18 3 14'2	108'44
12	19 22 7'43	24 56 2'9	65'00	12	20 59 31'03	17 52 23'5	109'15
13	19 24 15'18	24 49 32'9	66'12	13	21 1 26'68	17 41 28'5	109'86
14	19 26 22'68	24 42 56'1	67'23	14	21 3 22'10	17 30 29'3	110'57
15	19 28 29'94	24 36 12'7	68'33	15	21 5 17'30	17 19 25'9	111'26
16	19 30 36'94	24 29 22'7	69'42	16	21 7 12'27	17 8 18'3	111'94
17	19 32 43'68	24 22 26'2	70'51	17	21 9 7'03	16 57 6'6	112'62
18	19 34 50'18	24 15 23'1	71'58	18	21 11 1'56	16 45 50'9	113'28
19	19 36 56'42	24 8 13'6	72'65	19	21 12 55'88	16 34 31'2	113'94
20	19 39 2'40	24 0 57'6	73'71	20	21 14 49'98	16 23 7'5	114'59
21	19 41 8'13	23 53 35'3	74'76	21	21 16 43'87	16 11 39'9	115'24
22	19 43 13'60	23 46 6'7	75'81	22	21 18 37'55	16 0 8'5	115'87
23	19 45 18'81	23 38 31'8	76'84	23	21 20 31'02	15 48 33'2	116'49
24	19 47 23'76	S. 23 30 50'7		24	21 22 24'29	S. 15 36 54'2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 13.				MONDAY 15.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	21 22 24.29	S. 15 36 54.2	117.12	0	22 49 57.43	S. 5 20 8.7	137.24
1	21 24 17.35	15 25 11.5	117.72	1	22 51 44.38	5 6 25.2	137.47
2	21 26 10.22	15 13 25.1	118.33	2	22 53 31.29	4 52 40.4	137.69
3	21 28 2.89	15 1 35.1	118.92	3	22 55 18.16	4 38 54.2	137.90
4	21 29 55.36	14 49 41.6	119.50	4	22 57 4.99	4 25 6.8	138.11
5	21 31 47.65	14 37 44.6	120.08	5	22 58 51.79	4 11 18.1	138.31
6	21 33 39.74	14 25 44.1	120.65	6	23 0 38.57	3 57 28.2	138.50
7	21 35 31.65	14 13 40.2	121.20	7	23 2 25.33	3 43 37.2	138.68
8	21 37 23.37	14 1 32.9	121.75	8	23 4 12.06	3 29 45.1	138.86
9	21 39 14.92	13 49 22.4	122.30	9	23 5 58.78	3 15 51.9	139.02
10	21 41 6.28	13 37 8.6	122.83	10	23 7 45.50	3 1 57.7	139.18
11	21 42 57.47	13 24 51.6	123.35	11	23 9 32.20	2 48 2.6	139.34
12	21 44 48.49	13 12 31.4	123.87	12	23 11 18.90	2 34 6.5	139.48
13	21 46 39.34	13 0 8.2	124.38	13	23 13 5.60	2 20 9.6	139.62
14	21 48 30.02	12 47 41.9	124.88	14	23 14 52.31	2 6 11.9	139.75
15	21 50 20.54	12 35 12.5	125.37	15	23 16 39.03	1 52 13.4	139.87
16	21 52 10.90	12 22 40.2	125.86	16	23 18 25.75	1 38 14.1	139.98
17	21 54 1.10	12 10 5.1	126.34	17	23 20 12.50	1 24 14.2	140.09
18	21 55 51.15	11 57 27.1	126.81	18	23 21 59.27	1 10 13.6	140.19
19	21 57 41.05	11 44 46.2	127.27	19	23 23 46.06	0 56 12.5	140.28
20	21 59 30.80	11 32 2.6	127.72	20	23 25 32.88	0 42 10.8	140.36
21	22 1 20.41	11 19 16.2	128.17	21	23 27 19.74	0 28 8.6	140.44
22	22 3 9.87	11 6 27.2	128.60	22	23 29 6.63	0 14 6.0	140.50
23	22 4 59.20	S. 10 53 35.5	129.03	23	23 30 53.57	S. 0 0 2.9	140.56
SUNDAY 14.				TUESDAY 16.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	22 6 48.39	S. 10 40 41.3	129.46	0	23 32 40.55	N. 0 14 0.5	140.61
1	22 8 37.45	10 27 44.5	129.87	1	23 34 27.58	0 28 4.2	140.66
2	22 10 26.38	10 14 45.3	130.28	2	23 36 14.67	0 42 8.2	140.70
3	22 12 15.18	10 1 43.6	130.67	3	23 38 1.81	0 56 12.4	140.72
4	22 14 3.87	9 48 39.5	131.06	4	23 39 49.02	1 10 16.8	140.75
5	22 15 52.43	9 35 33.1	131.45	5	23 41 36.30	1 24 21.3	140.76
6	22 17 40.88	9 22 24.4	131.82	6	23 43 23.64	1 38 25.9	140.76
7	22 19 29.22	9 9 13.4	132.19	7	23 45 11.06	1 52 30.5	140.76
8	22 21 17.45	8 56 0.3	132.55	8	23 46 58.56	2 6 35.1	140.75
9	22 23 5.58	8 42 45.0	132.90	9	23 48 46.15	2 20 39.6	140.73
10	22 24 53.61	8 29 27.6	133.24	10	23 50 33.82	2 34 44.0	140.71
11	22 26 41.53	8 16 8.1	133.58	11	23 52 21.59	2 48 48.3	140.67
12	22 28 29.37	8 2 46.6	133.90	12	23 54 9.45	3 2 52.4	140.63
13	22 30 17.12	7 49 23.2	134.22	13	23 55 57.41	3 16 56.2	140.58
14	22 32 4.78	7 35 57.8	134.53	14	23 57 45.48	3 30 59.7	140.52
15	22 33 52.36	7 22 30.6	134.84	15	23 59 33.66	3 45 2.9	140.46
16	22 35 39.86	7 9 1.5	135.14	16	0 1 21.95	3 59 5.7	140.38
17	22 37 27.28	6 55 30.7	135.43	17	0 3 10.37	4 13 8.0	140.30
18	22 39 14.63	6 41 58.1	135.71	18	0 4 58.90	4 27 9.9	140.21
19	22 41 1.91	6 28 23.8	135.98	19	0 6 47.56	4 41 11.2	140.11
20	22 42 49.13	6 14 47.9	136.25	20	0 8 36.36	4 55 11.9	140.00
21	22 44 36.28	6 1 10.4	136.51	21	0 10 25.29	5 9 11.9	139.89
22	22 46 23.38	5 47 31.3	136.76	22	0 12 14.36	5 23 11.3	139.76
23	22 48 10.43	5 33 50.8	137.00	23	0 14 3.57	5 37 9.9	139.63
24	22 49 57.43	S. 5 20 8.7		24	0 15 52.94	N. 5 51 7.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 17.				FRIDAY 19.			
0	h m s	N. ° ' "	"	0	h m s	N. ° ' "	"
0	15 52.94	5 51 7.7	139.49	0	1 47 45.38	16 27 48.2	121.53
1	17 42.46	6 5 4.7	139.34	1	49 47.51	16 39 57.4	120.89
2	19 32.13	6 19 0.8	139.18	2	51 50.00	16 52 2.8	120.24
3	21 21.97	6 32 55.9	139.02	3	53 52.87	17 4 4.2	119.37
4	23 11.97	6 46 50.0	138.84	4	55 56.11	17 16 1.7	118.90
5	25 2.15	7 0 43.1	138.66	5	57 59.74	17 27 55.1	118.21
6	26 52.50	7 14 35.1	138.46	6	2 0 3.74	17 39 44.4	117.51
7	28 43.03	7 28 25.9	138.26	7	2 2 8.13	17 51 29.4	116.79
8	30 33.75	7 42 15.5	138.05	8	2 4 12.92	18 3 10.2	116.07
9	32 24.65	7 56 3.8	137.83	9	2 6 18.09	18 14 46.6	115.33
10	34 15.75	8 9 50.8	137.60	10	2 8 23.66	18 26 18.6	114.57
11	36 7.05	8 23 36.5	137.36	11	2 10 29.64	18 37 46.1	113.81
12	37 58.55	8 37 20.7	137.12	12	2 12 36.01	18 49 9.0	113.03
13	39 50.26	8 51 3.5	136.86	13	2 14 42.79	19 0 27.2	112.24
14	41 42.18	9 4 44.7	136.60	14	2 16 49.99	19 11 40.7	111.43
15	43 34.31	9 18 24.3	136.32	15	2 18 57.60	19 22 49.3	110.61
16	45 26.67	9 32 2.2	136.04	16	2 21 5.62	19 33 53.0	109.78
17	47 19.25	9 45 38.5	135.74	17	2 23 14.07	19 44 51.7	108.93
18	49 12.06	9 59 13.0	135.44	18	2 25 22.94	19 55 45.3	108.07
19	51 5.11	10 12 45.7	135.13	19	2 27 32.23	20 6 33.7	107.19
20	52 58.39	10 26 16.5	134.81	20	2 29 41.96	20 17 16.9	106.30
21	54 51.92	10 39 45.3	134.47	21	2 31 52.11	20 27 54.7	105.40
22	56 45.70	10 53 12.2	134.13	22	2 34 2.70	20 38 27.1	104.48
23	58 39.73	N. 11 6 37.0	133.78	23	2 36 13.73	N. 20 48 54.1	103.55
THURSDAY 18.				SATURDAY 20.			
0	1 0 34.01	N. 11 19 59.7	133.41	0	2 38 25.19	N. 20 59 15.4	102.60
1	1 2 28.56	11 33 20.2	133.04	1	2 40 37.09	21 9 31.0	101.64
2	1 4 23.37	11 46 38.5	132.66	2	2 42 49.44	21 19 40.9	100.67
3	1 6 18.45	11 59 54.5	132.27	3	2 45 2.23	21 29 44.9	99.67
4	1 8 13.81	12 13 8.1	131.86	4	2 47 15.47	21 39 43.0	98.67
5	1 10 9.45	12 26 19.3	131.45	5	2 49 29.16	21 49 35.1	97.65
6	1 12 5.37	12 39 28.0	131.03	6	2 51 43.30	21 59 21.0	96.61
7	1 14 1.58	12 52 34.2	130.59	7	2 53 57.89	22 9 0.7	95.56
8	1 15 58.08	13 5 37.8	130.15	8	2 56 12.94	22 18 34.1	94.50
9	1 17 54.87	13 18 38.7	129.69	9	2 58 28.43	22 28 1.1	93.42
10	1 19 51.97	13 31 36.9	129.23	10	3 0 44.39	22 37 21.7	92.33
11	1 21 49.37	13 44 32.3	128.75	11	3 3 0.80	22 46 35.7	91.22
12	1 23 47.09	13 57 24.9	128.27	12	3 5 17.67	22 55 43.0	90.09
13	1 25 45.12	14 10 14.5	127.77	13	3 7 35.00	23 4 43.6	88.95
14	1 27 43.47	14 23 1.2	127.26	14	3 9 52.78	23 13 37.3	87.80
15	1 29 42.14	14 35 44.8	126.74	15	3 12 11.03	23 22 24.1	86.62
16	1 31 41.13	14 48 25.3	126.21	16	3 14 29.74	23 31 3.9	85.44
17	1 33 40.46	15 1 2.5	125.66	17	3 16 48.91	23 39 36.6	84.23
18	1 35 40.13	15 13 36.5	125.11	18	3 19 8.54	23 48 2.0	83.02
19	1 37 40.13	15 26 7.2	124.54	19	3 21 28.62	23 56 20.1	81.78
20	1 39 40.48	15 38 34.5	123.96	20	3 23 49.17	24 4 30.8	80.54
21	1 41 41.17	15 50 58.3	123.37	21	3 26 10.18	24 12 34.1	79.27
22	1 43 42.22	16 3 18.6	122.77	22	3 28 31.65	24 20 29.8	77.99
23	1 45 43.62	16 15 35.2	122.16	23	3 30 53.57	24 28 17.8	76.70
24	1 47 45.38	N. 16 27 48.2		24	3 32 15.06	N. 24 25 58.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 21.				TUESDAY 23.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	3 33 15.96	N.24 35 58.0	75.39	0	5 35 1.87	N.27 43 9.3	3.91
1	3 35 38.80	24 43 30.4	74.06	1	5 37 41.53	27 42 45.8	5.83
2	3 38 2.10	24 50 54.8	72.72	2	5 40 21.35	27 42 10.8	7.75
3	3 40 25.84	24 58 11.2	71.37	3	5 43 1.33	27 41 24.2	9.68
4	3 42 50.04	25 5 19.4	69.99	4	5 45 41.47	27 40 26.1	11.61
5	3 45 14.70	25 12 19.3	68.60	5	5 48 21.74	27 39 16.5	13.54
6	3 47 39.79	25 19 11.0	67.20	6	5 51 2.15	27 37 55.2	15.48
7	3 50 5.33	25 25 54.3	65.78	7	5 53 42.68	27 36 22.2	17.43
8	3 52 31.32	25 32 29.0	64.35	8	5 56 23.31	27 34 37.6	19.38
9	3 54 57.74	25 38 55.1	62.90	9	5 59 4.05	27 32 41.4	21.33
10	3 57 24.61	25 45 12.5	61.44	10	6 1 44.88	27 30 33.4	23.28
11	3 59 51.90	25 51 21.2	59.96	11	6 4 25.79	27 28 13.7	25.24
12	4 2 19.63	25 57 21.0	58.47	12	6 7 6.78	27 25 42.2	27.20
13	4 4 47.79	26 3 11.8	56.96	13	6 9 47.82	27 22 59.0	29.16
14	4 7 16.38	26 8 53.6	55.43	14	6 12 28.92	27 20 4.0	31.12
15	4 9 45.39	26 14 26.2	53.89	15	6 15 10.05	27 16 57.2	33.08
16	4 12 14.81	26 19 49.6	52.34	16	6 17 51.21	27 13 38.6	35.04
17	4 14 44.65	26 25 3.7	50.77	17	6 20 32.39	27 10 8.3	37.00
18	4 17 14.89	26 30 8.4	49.19	18	6 23 13.58	27 6 26.3	38.96
19	4 19 45.54	26 35 3.6	47.60	19	6 25 54.77	27 2 32.5	40.92
20	4 22 16.58	26 39 49.2	45.99	20	6 28 35.95	26 58 27.0	42.87
21	4 24 48.01	26 44 25.1	44.36	21	6 31 17.11	26 54 9.7	44.83
22	4 27 19.83	26 48 51.3	42.73	22	6 33 58.24	26 49 40.7	46.78
23	4 29 52.03	N.26 53 7.7	41.08	23	6 36 39.33	N.26 45 0.0	48.73
MONDAY 22.				WEDNESDAY 24.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	4 32 24.61	N.26 57 14.2	39.41	0	6 39 20.37	N.26 40 7.6	50.67
1	4 34 57.57	27 1 10.7	37.74	1	6 42 1.35	26 35 3.6	52.61
2	4 37 30.89	27 4 57.2	36.04	2	6 44 42.26	26 29 47.9	54.54
3	4 40 4.57	27 8 33.5	34.34	3	6 47 23.10	26 24 20.6	56.47
4	4 42 38.60	27 11 59.5	32.62	4	6 50 3.84	26 18 41.7	58.40
5	4 45 12.98	27 15 15.3	30.90	5	6 52 44.49	26 12 51.3	60.32
6	4 47 47.69	27 18 20.7	29.15	6	6 55 25.03	26 6 49.4	62.23
7	4 50 22.74	27 21 15.7	27.40	7	6 58 5.46	26 0 36.0	64.13
8	4 52 58.12	27 24 0.1	25.64	8	7 0 45.77	25 54 11.2	66.03
9	4 55 33.81	27 26 34.0	23.86	9	7 3 25.94	25 47 34.9	67.93
10	4 58 9.81	27 28 57.2	22.08	10	7 6 5.96	25 40 47.3	69.81
11	5 0 46.11	27 31 9.7	20.28	11	7 8 45.84	25 33 48.4	71.69
12	5 3 22.71	27 33 11.4	18.47	12	7 11 25.56	25 26 38.3	73.56
13	5 5 59.60	27 35 2.2	16.65	13	7 14 5.11	25 19 16.9	75.41
14	5 8 36.77	27 36 42.1	14.82	14	7 16 44.49	25 11 44.4	77.26
15	5 11 14.21	27 38 11.1	12.98	15	7 19 23.69	25 4 0.8	79.10
16	5 13 51.91	27 39 29.0	11.14	16	7 22 2.70	24 56 6.2	80.93
17	5 16 29.86	27 40 35.9	9.28	17	7 24 41.50	24 48 0.6	82.74
18	5 19 8.06	27 41 31.6	7.42	18	7 27 20.11	24 39 44.1	84.55
19	5 21 46.49	27 42 16.1	5.54	19	7 29 58.50	24 31 16.8	86.35
20	5 24 25.15	27 42 49.4	3.66	20	7 32 36.68	24 22 38.7	88.13
21	5 27 4.03	27 43 11.4	1.78	21	7 35 14.63	24 13 49.9	89.90
22	5 29 43.12	27 43 22.1	0.11	22	7 37 52.34	24 4 50.5	91.66
23	5 32 22.40	27 43 21.4	1.01	23	7 40 29.82	23 55 40.5	93.41
24	5 35 1.87	N.27 43 9.3		24	7 43 7.05	N.23 46 20.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 25.				SATURDAY 27.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	7 43 7.05	N.23 46 20.0	95.14	0	9 42 56.19	N.13 25 3.8	157.63
1	7 45 44.03	23 36 49.1	96.86	1	9 45 18.02	13 9 18.0	158.44
2	7 48 20.76	23 27 8.0	98.56	2	9 47 39.55	12 53 27.3	159.22
3	7 50 57.22	23 17 16.6	100.25	3	9 50 0.78	12 37 32.0	159.98
4	7 53 33.42	23 7 15.0	101.93	4	9 52 21.70	12 21 32.1	160.72
5	7 56 9.35	22 57 3.4	103.59	5	9 54 42.32	12 5 27.7	161.44
6	7 58 45.00	22 46 41.8	105.23	6	9 57 2.64	11 49 19.1	162.13
7	8 1 20.36	22 36 10.4	106.86	7	9 59 22.67	11 33 6.3	162.80
8	8 3 55.44	22 25 29.2	108.48	8	10 1 42.42	11 16 49.4	163.46
9	8 6 30.23	22 14 38.3	110.08	9	10 4 1.87	11 0 28.6	164.09
10	8 9 4.72	22 3 37.8	111.66	10	10 6 21.05	10 44 4.1	164.70
11	8 11 38.92	21 52 27.9	113.22	11	10 8 39.94	10 27 35.9	165.28
12	8 14 12.80	21 41 8.5	114.77	12	10 10 58.55	10 11 4.1	165.85
13	8 16 46.38	21 29 39.8	116.30	13	10 13 16.89	9 54 29.0	166.39
14	8 19 19.66	21 18 2.0	117.81	14	10 15 34.97	9 37 50.6	166.91
15	8 21 52.62	21 6 15.1	119.31	15	10 17 52.78	9 21 9.1	167.41
16	8 24 25.27	20 54 19.2	120.79	16	10 20 10.32	9 4 24.6	167.89
17	8 26 57.60	20 42 14.4	122.25	17	10 22 27.61	8 47 37.2	168.35
18	8 29 29.60	20 30 0.9	123.69	18	10 24 44.65	8 30 47.1	168.79
19	8 32 1.29	20 17 38.8	125.11	19	10 27 1.44	8 13 54.3	169.21
20	8 34 32.65	20 5 8.1	126.52	20	10 29 17.98	7 56 59.0	169.60
21	8 37 3.68	19 52 28.9	127.90	21	10 31 34.27	7 40 1.4	169.98
22	8 39 34.39	19 39 41.5	129.27	22	10 33 50.34	7 23 1.5	170.33
23	8 42 4.76	N.19 26 45.8	130.62	23	10 36 6.16	N. 7 5 59.5	170.66
FRIDAY 26.				SUNDAY 28.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	8 44 34.81	N.19 13 42.1	131.95	0	10 38 21.76	N. 6 48 55.5	170.97
1	8 47 4.52	19 0 30.4	133.25	1	10 40 37.13	6 31 49.6	171.26
2	8 49 33.90	18 47 10.8	134.54	2	10 42 52.29	6 14 42.0	171.53
3	8 52 2.95	18 33 43.5	135.81	3	10 45 7.23	5 57 32.8	171.77
4	8 54 31.66	18 20 8.7	137.06	4	10 47 21.95	5 40 22.1	172.00
5	8 57 0.04	18 6 26.3	138.29	5	10 49 36.47	5 23 10.0	172.21
6	8 59 28.08	17 52 36.5	139.49	6	10 51 50.78	5 5 56.6	172.4
7	9 1 55.78	17 38 39.5	140.68	7	10 54 4.90	4 48 42.1	172.5
8	9 4 23.15	17 24 35.4	141.85	8	10 56 18.82	4 31 26.6	172.7
9	9 6 50.19	17 10 24.3	142.99	9	10 58 32.56	4 14 10.2	172.8
10	9 9 16.89	16 56 6.3	144.12	10	11 0 46.11	3 56 53.0	172.9
11	9 11 43.26	16 41 41.6	145.22	11	11 2 59.48	3 39 35.2	173.0
12	9 14 9.29	16 27 10.2	146.30	12	11 5 12.67	3 22 16.9	173.1
13	9 16 34.99	16 12 32.3	147.36	13	11 7 25.69	3 4 58.1	173.1
14	9 19 0.36	15 57 48.1	148.40	14	11 9 38.55	2 47 39.1	173.2
15	9 21 25.41	15 42 57.7	149.42	15	11 11 51.25	2 30 19.8	173.2
16	9 23 50.12	15 28 1.1	150.42	16	11 14 3.79	2 13 0.5	173.2
17	9 26 14.51	15 12 58.5	151.40	17	11 16 16.18	1 55 41.3	173.1
18	9 28 38.57	14 57 50.1	152.35	18	11 18 28.42	1 38 22.2	173.1
19	9 31 2.30	14 42 36.0	153.29	19	11 20 40.52	1 21 3.4	173.0
20	9 33 25.72	14 27 16.2	154.20	20	11 22 52.48	1 3 45.1	172.9
21	9 35 48.81	14 11 51.0	155.09	21	11 25 4.30	0 46 27.2	172.8
22	9 38 11.58	13 56 20.5	155.96	22	11 27 16.00	0 29 9.9	172.7
23	9 40 34.04	13 40 44.7	156.81	23	11 29 27.57	N. 0 11 53.4	172.6
24	9 42 56.19	N.13 25 3.8		24	11 31 39.02	S. 0 5 22.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
MONDAY 29.				WEDNESDAY 31.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	11 31 39.02	S. 0 5 22.2	172.44	0	13 15 55.45	S. 13 4 13.8	145.71
1	11 33 50.36	0 22 36.9	172.26	1	13 18 6.33	13 18 48.1	144.81
2	11 36 1.59	0 39 50.5	172.06	2	13 20 17.29	13 33 17.0	143.90
3	11 38 12.71	0 57 2.9	171.85	3	13 22 28.33	13 47 40.4	142.97
4	11 40 23.74	1 14 14.0	171.62	4	13 24 39.45	14 1 58.2	142.03
5	11 42 34.66	1 31 23.7	171.37	5	13 26 50.66	14 16 10.5	141.09
6	11 44 45.50	1 48 32.0	171.10	6	13 29 1.97	14 30 17.0	140.12
7	11 46 56.25	2 5 38.6	170.82	7	13 31 13.36	14 44 17.8	139.15
8	11 49 6.91	2 22 43.5	170.51	8	13 33 24.86	14 58 12.7	138.17
9	11 51 17.50	2 39 46.7	170.20	9	13 35 36.44	15 12 1.8	137.18
10	11 53 28.02	2 56 47.9	169.86	10	13 37 48.13	15 25 44.9	136.17
11	11 55 38.46	3 13 47.0	169.51	11	13 39 59.92	15 39 21.9	135.16
12	11 57 48.84	3 30 44.1	169.14	12	13 42 11.81	15 52 52.9	134.13
13	11 59 59.16	3 47 39.0	168.75	13	13 44 23.81	16 6 17.7	133.09
14	12 2 9.43	4 4 31.5	168.35	14	13 46 35.91	16 19 36.2	132.04
15	12 4 19.64	4 21 21.6	167.93	15	13 48 48.13	16 32 48.5	130.98
16	12 6 29.81	4 38 9.3	167.50	16	13 51 0.45	16 45 54.4	129.91
17	12 8 39.94	4 54 54.3	167.04	17	13 53 12.89	16 58 54.0	128.84
18	12 10 50.03	5 11 36.5	166.58	18	13 55 25.45	17 11 47.0	127.75
19	12 13 0.09	5 28 16.0	166.09	19	13 57 38.12	17 24 33.5	126.65
20	12 15 10.11	5 44 52.6	165.59	20	13 59 50.90	17 37 13.5	125.51
21	12 17 20.11	6 1 26.2	165.08	21	14 2 3.81	17 49 46.8	124.43
22	12 19 30.10	6 17 56.7	164.55	22	14 4 16.84	18 2 13.4	123.30
23	12 21 40.07	S. 6 34 24.0	164.00	23	14 6 29.98	S. 18 14 33.2	122.17
TUESDAY 30.				THURSDAY, SEPT. 1.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	12 23 50.03	S. 6 50 48.0	163.44	0	14 8 43.26	S. 18 26 46.2	
1	12 25 39.98	7 7 8.6	162.86				
2	12 28 9.92	7 23 25.8	162.27				
3	12 30 19.87	7 39 39.5	161.66				
4	12 32 29.82	7 55 49.5	161.04				
5	12 34 39.77	8 11 55.7	160.40				
6	12 36 49.74	8 27 58.2	159.75				
7	12 38 59.73	8 43 56.7	159.08				
8	12 41 9.73	8 59 51.2	158.41				
9	12 43 19.76	9 15 41.7	157.71				
10	12 45 29.82	9 31 28.0	157.00				
11	12 47 39.91	9 47 10.1	156.28				
12	12 49 50.03	10 2 47.8	155.55				
13	12 52 0.19	10 18 27.1	154.80				
14	12 54 10.39	10 33 49.9	154.04				
15	12 56 20.64	10 49 14.2	153.26				
16	12 58 30.94	11 4 33.8	152.47				
17	13 0 41.29	11 19 48.6	151.67				
18	13 2 51.69	11 34 58.7	150.86				
19	13 5 2.15	11 50 3.9	150.03				
20	13 7 12.68	12 5 4.1	149.19				
21	13 9 23.26	12 19 59.3	148.34				
22	13 11 33.92	12 34 49.3	147.47				
23	13 13 44.65	12 49 34.2	146.60				
24	13 15 55.45	S. 13 4 13.8					

PHASES OF THE MOON.

	<i>d h m</i>
☾ First Quarter -	5 3 21.6
○ Full Moon -	13 4 34.2
☾ Last Quarter -	21 1 45.7
● New Moon -	27 17 13.5

	<i>d h</i>
☾ Apogee -	12 6
☾ Perigee -	26 22

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
1	SUN W.	36° 35' 14"	2414	38° 18' 29"	2429	40° 1' 23"	2444	41° 43' 55"	2460
	Spica E.	36° 40' 32"	2134	34° 50' 24"	2149	33° 0' 39"	2165	31° 11' 19"	2182
	Antares E.	82° 28' 35"	2120	80° 38' 7"	2134	78° 48' 0"	2149	76° 58' 16"	2164
2	SUN W.	50° 10' 48"	2546	51° 50' 57"	2564	53° 30' 42"	2582	55° 10' 2"	2601
	Antares E.	67° 55' 26"	2245	66° 8' 6"	2262	64° 21' 10"	2279	62° 34' 39"	2296
	α Aquilæ E.	117° 43' 27"	3130	116° 15' 54"	3120	114° 48' 8"	3113	113° 20' 14"	3108
3	SUN W.	63° 20' 18"	2696	64° 57' 4"	2715	66° 33' 24"	2734	68° 9' 19"	2753
	Antares E.	53° 48' 32"	2385	52° 4' 36"	2403	50° 21' 5"	2421	48° 38' 1"	2439
	α Aquilæ E.	106° 0' 10"	3115	104° 32' 19"	3123	103° 4' 37"	3130	101° 37' 3"	3139
4	SUN W.	76° 2' 33"	2849	77° 35' 58"	2868	79° 8' 58"	2886	80° 41' 35"	2905
	Antares E.	40° 8' 57"	2528	38° 28' 23"	2546	36° 48' 13"	2563	35° 8' 27"	2580
	α Aquilæ E.	94° 22' 32"	3202	92° 56' 25"	3217	91° 30' 36"	3234	90° 5' 7"	3251
	Fomalhaut E.	119° 36' 45"	2969	118° 5' 54"	2974	116° 35' 9"	2979	115° 4' 30"	2985
5	SUN W.	88° 18' 52"	2994	89° 49' 13"	3011	91° 19' 12"	3027	92° 48' 51"	3043
	Spica W.	19° 8' 0"	2701	20° 44' 38"	2711	22° 21' 3"	2723	23° 57' 12"	2735
	Antares E.	26° 55' 24"	2663	25° 17' 55"	2678	23° 40' 46"	2695	22° 3' 59"	2710
	α Aquilæ E.	83° 2' 59"	3348	81° 39' 43"	3369	80° 16' 51"	3391	78° 54' 24"	3415
	Fomalhaut E.	107° 33' 26"	3026	106° 3' 45"	3036	104° 34' 17"	3046	103° 5' 1"	3057
6	SUN W.	100° 12' 9"	3121	101° 39' 53"	3136	103° 7' 19"	3150	104° 34' 28"	3164
	Spica W.	31° 54' 1"	2796	33° 28' 34"	2808	35° 2' 51"	2820	36° 36' 53"	2832
	α Aquilæ E.	72° 8' 59"	3542	70° 49' 21"	3570	69° 30' 14"	3599	68° 11' 39"	3630
	Fomalhaut E.	95° 42' 7"	3114	94° 14' 15"	3126	92° 46' 37"	3138	91° 19' 14"	3151
	α Pegasi E.	117° 59' 19"	3017	116° 29' 28"	3024	114° 59' 45"	3032	113° 30' 12"	3039
7	SUN W.	111° 46' 14"	3228	113° 11' 50"	3239	114° 37' 13"	3250	116° 2' 23"	3261
	Spica W.	44° 23' 18"	2887	45° 55' 53"	2898	47° 28' 15"	2908	49° 0' 24"	2917
	α Aquilæ E.	61° 47' 20"	3802	60° 32' 20"	3842	59° 18' 1"	3883	58° 4' 24"	3926
	Fomalhaut E.	84° 6' 5"	3214	82° 40' 13"	3227	81° 14' 36"	3241	79° 49' 15"	3254
	α Pegasi E.	106° 4' 46"	3078	104° 36' 10"	3086	103° 7' 43"	3095	101° 39' 27"	3102
8	SUN W.	123° 5' 10"	3310	124° 29' 10"	3319	125° 53' 0"	3327	127° 16' 40"	3334
	Spica W.	56° 38' 14"	2961	58° 9' 16"	2969	59° 40' 8"	2976	61° 10' 51"	2983
	α Aquilæ E.	52° 8' 7"	4188	50° 59' 29"	4251	49° 51' 51"	4318	48° 45' 15"	4390
	Fomalhaut E.	72° 46' 27"	3324	71° 22' 43"	3338	69° 59' 15"	3353	68° 36' 4"	3369
	α Pegasi E.	94° 20' 24"	3140	92° 53' 3"	3148	91° 25' 51"	3155	89° 58' 48"	3162
9	Spica W.	68° 42' 20"	3014	70° 12' 15"	3020	71° 42' 3"	3025	73° 11' 45"	3030
	Antares W.	22° 48' 24"	3010	24° 18' 25"	3016	25° 48' 18"	3020	27° 18' 6"	3025
	Fomalhaut E.	61° 44' 45"	3452	60° 23' 27"	3471	59° 2' 31"	3491	57° 41' 57"	3511
	α Pegasi E.	82° 45' 44"	3198	81° 19' 32"	3205	79° 53' 29"	3211	78° 27' 33"	3219
	α Arietis E.	125° 10' 43"	3032	123° 41' 10"	3036	122° 11' 42"	3041	120° 42' 20"	3045
10	Spica W.	80° 38' 56"	3049	82° 8' 8"	3052	83° 37' 16"	3055	85° 6' 20"	3057
	Antares W.	34° 45' 42"	3045	36° 14' 59"	3048	37° 44' 12"	3051	39° 13' 22"	3054
	Fomalhaut E.	51° 5' 13"	3635	49° 47' 16"	3664	48° 29' 51"	3696	47° 13' 0"	3730
	α Pegasi E.	71° 19' 59"	3254	69° 54' 54"	3260	68° 29' 56"	3268	67° 5' 7"	3276
	α Arietis E.	113° 16' 42"	3062	111° 47' 46"	3066	110° 18' 55"	3068	108° 50' 6"	3070
11	Spica W.	92° 31' 0"	3068	93° 59' 49"	3069	95° 28' 37"	3070	96° 57' 23"	3071

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1	Sun W.	43 26 5	2477	45 7 51	2493	46 49 14	2510	48 30 13	2528
	Spica E.	29 22 24	2199	27 33 55	2218	25 45 54	2237	23 58 22	2257
	Antares E.	75 8 55	2180	73 19 57	2195	71 31 22	2212	69 43 12	2228
2	Sun W.	56 48 56	2619	58 27 25	2638	60 5 28	2657	61 43 6	2676
	Antares E.	60 48 34	2314	59 2 55	2331	57 17 41	2350	55 32 54	2367
	α Aquilæ E.	111 52 14	3106	110 24 12	3105	108 56 8	3107	107 28 7	3110
3	Sun W.	69 44 48	2772	71 19 52	2792	72 54 30	2811	74 28 44	2830
	Antares E.	46 55 22	2457	45 13 8	2475	43 31 19	2493	41 49 56	2510
	α Aquilæ E.	100 9 41	3150	98 42 32	3162	97 15 37	3174	95 48 56	3188
4	Sun W.	82 13 48	2923	83 45 38	2941	85 17 5	2958	86 48 10	2977
	Antares E.	33 29 5	2596	31 50 5	2614	30 11 29	2631	28 33 16	2646
	α Aquilæ E.	88 39 58	3269	87 15 10	3288	85 50 44	3307	84 26 40	3327
	Fomalhaut E.	113 33 58	2992	112 3 35	2999	110 33 21	3008	109 3 18	3017
5	Sun W.	94 18 10	3060	95 47 8	3076	97 15 47	3091	98 44 8	3107
	Spica W.	25 33 6	2747	27 8 44	2759	28 44 6	2771	30 19 12	2784
	Antares E.	20 27 32	2725	18 51 26	2740	17 15 39	2755	15 40 12	2769
	α Aquilæ E.	77 32 24	3439	76 10 51	3463	74 49 45	3488	73 29 7	3515
	Fomalhaut E.	101 35 59	3068	100 7 10	3079	98 38 35	3091	97 10 14	3102
6	Sun W.	106 1 20	3177	107 27 57	3191	108 54 17	3203	110 20 23	3215
	Spica W.	38 10 39	2844	39 44 10	2855	41 17 27	2866	42 50 30	2877
	α Aquilæ E.	66 53 37	3661	65 36 8	3694	64 19 15	3729	63 2 59	3765
	Fomalhaut E.	89 52 6	3163	88 25 13	3176	86 58 35	3189	85 32 13	3201
	α Pegasi E.	112 0 48	3047	110 31 33	3055	109 2 28	3062	107 33 32	3070
7	Sun W.	117 27 20	3271	118 52 5	3282	120 16 37	3291	121 40 59	3301
	Spica W.	50 32 21	2927	52 4 6	2936	53 35 39	2944	55 7 2	2953
	α Aquilæ E.	56 51 31	3973	55 39 25	4022	54 28 7	4074	53 17 40	4130
	Fomalhaut E.	78 24 9	3268	76 59 20	3281	75 34 46	3295	74 10 29	3308
	α Pegasi E.	100 11 19	3109	98 43 21	3118	97 15 33	3125	95 47 54	3133
8	Sun W.	128 40 12	3342	130 3 35	3350	131 26 49	3357	132 49 55	3363
	Spica W.	62 41 25	2990	64 11 50	2996	65 42 8	3003	67 12 17	3008
	α Aquilæ E.	47 39 45	4468	46 35 25	4552	45 32 19	4643	44 30 31	4741
	Fomalhaut E.	67 13 12	3384	65 50 37	3400	64 28 20	3417	63 6 23	3434
	α Pegasi E.	88 31 54	3170	87 5 9	3177	85 38 32	3184	84 12 4	3191
9	Spica W.	74 41 21	3033	76 10 53	3038	77 40 18	3042	79 9 39	3045
	Antares W.	28 47 47	3029	30 17 24	3034	31 46 54	3038	33 16 20	3041
	Fomalhaut E.	56 21 45	3533	55 1 58	3556	53 42 36	3580	52 23 40	3607
	α Pegasi E.	77 1 46	3225	75 36 7	3232	74 10 36	3240	72 45 14	3246
	α Arietis E.	119 13 3	3049	117 43 51	3053	116 14 44	3056	114 45 41	3060
10	Spica W.	86 35 22	3060	88 4 20	3062	89 33 16	3064	91 2 9	3066
	Antares W.	40 42 28	3056	42 11 32	3058	43 40 33	3060	45 9 31	3062
	Fomalhaut E.	45 56 45	3768	44 41 10	3809	43 26 17	3854	42 12 10	3903
	α Pegasi E.	65 40 27	3283	64 15 56	3291	62 51 34	3299	61 27 22	3308
	α Arietis E.	107 21 20	3073	105 52 37	3074	104 23 56	3077	102 55 18	3078
11	Spica W.	98 26 8	3072	99 54 52	3073	101 23 35	3073	102 52 18	3073
	Antares W.	52 33 56	3068	54 2 45	3068	55 31 34	3068	57 0 23	3069

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11	Fomalhaut E.	40 58 53	3956	39 46 29	4015	38 35 4	4080	37 24 43	4153
	α Pegasi E.	60 39 28	3317	58 39 28	3326	57 15 47	3337	55 52 18	3347
	α Arietis E.	101 26 41	3079	99 58 6	3081	98 29 33	3081	97 1 0	3082
12	Spica W.	104 21 1	3073	105 49 44	3072	107 18 27	3072	108 47 11	3072
	Antares W.	58 29 11	3068	59 58 0	3068	61 26 48	3067	62 55 38	3067
	Fomalhaut E.	31 52 52	4671	30 51 28	4820	29 52 8	4990	28 55 5	5185
	α Pegasi E.	48 58 11	3412	47 36 8	3429	46 14 24	3447	44 53 0	3466
	α Arietis E.	89 38 29	3083	88 9 59	3083	86 41 29	3083	85 12 59	3083
	Aldebaran E.	121 13 20	3167	119 46 32	3165	118 19 41	3162	116 52 46	3158
13	Antares W.	70 20 0	3061	71 48 57	3060	73 17 56	3058	74 46 57	3056
	α Pegasi E.	38 12 17	3601	36 53 44	3637	35 35 49	3679	34 18 40	3726
	α Arietis E.	77 50 13	3078	76 21 36	3077	74 52 58	3074	73 24 17	3073
	Aldebaran E.	109 37 16	3143	108 9 59	3141	106 42 39	3138	105 15 15	3134
14	Antares W.	82 12 43	3043	83 42 2	3041	85 11 24	3038	86 40 50	3034
	α Aquilæ W.	40 22 51	5154	41 17 47	5027	42 14 21	4909	43 12 29	4802
	α Arietis E.	66 0 18	3063	64 31 23	3060	63 2 24	3057	61 33 22	3055
	Aldebaran E.	97 57 17	3119	96 29 30	3115	95 1 39	3111	93 33 43	3109
15	Antares W.	94 9 6	3016	95 38 59	3011	97 8 58	3006	98 39 3	3002
	α Aquilæ W.	48 23 8	4385	49 28 43	4320	50 35 17	4259	51 42 48	4203
	α Arietis E.	54 7 20	3040	52 37 56	3037	51 8 29	3032	49 38 56	3029
	Aldebaran E.	86 13 0	3090	84 44 38	3085	83 16 10	3082	81 47 38	3078
	Jupiter E.	122 50 34	3098	121 22 22	3093	119 54 4	3088	118 25 40	3083
16	Antares W.	106 10 57	2976	107 41 40	2970	109 12 31	2964	110 43 29	2957
	α Aquilæ W.	57 32 34	3974	58 44 39	3936	59 57 22	3901	61 10 41	3867
	Fomalhaut W.	32 14 27	4407	33 19 42	4288	34 26 46	4183	35 35 28	4088
	α Arietis E.	42 10 9	3012	40 40 11	3007	39 10 7	3004	37 39 59	3001
	Aldebaran E.	74 23 40	3056	72 54 36	3051	71 25 27	3046	69 56 11	3042
	Jupiter E.	111 2 3	3055	109 32 59	3048	108 3 46	3043	106 34 27	3036
	Pollux E.	116 50 1	2989	115 19 35	2983	113 49 1	2977	112 18 20	2970
17	α Aquilæ W.	67 25 16	3725	68 41 37	3701	69 58 23	3677	71 15 34	3655
	Fomalhaut W.	41 39 22	3735	42 55 32	3683	44 12 37	3633	45 30 36	3587
	α Arietis E.	30 8 21	2988	28 37 53	2986	27 7 23	2987	25 36 54	2988
	Aldebaran E.	62 28 27	3018	60 58 37	3013	59 28 40	3008	57 58 37	3004
	Jupiter E.	99 5 39	3000	97 35 26	2992	96 5 3	2984	94 34 30	2975
	Pollux E.	104 42 40	2935	103 11 5	2927	101 39 20	2918	100 7 24	2910
	Sun E.	137 53 39	3276	136 29 0	3268	135 4 11	3259	133 39 12	3250
18	α Aquilæ W.	77 47 7	3558	79 6 27	3541	80 26 6	3525	81 46 3	3509
	Fomalhaut W.	52 11 56	3400	53 34 12	3369	54 57 4	3340	56 20 30	3312
	α Pegasi W.	30 3 27	3670	31 20 46	3591	32 39 30	3520	33 59 32	3456
	Aldebaran E.	50 26 59	2982	48 56 24	2979	47 25 45	2976	45 55 2	2973
	Jupiter E.	86 59 0	2930	85 27 19	2920	83 55 25	2909	82 23 18	2899
	Pollux E.	92 25 1	2866	90 51 58	2856	89 18 42	2845	87 45 12	2835
	Sun E.	126 31 33	3202	125 5 26	3192	123 39 7	3181	122 12 35	3170
19	α Aquilæ W.	88 29 55	3440	89 51 27	3428	91 13 12	3416	92 35 10	3406
	Fomalhaut W.	63 25 28	3185	64 51 55	3163	66 18 48	3141	67 46 8	3119
	α Pegasi W.	40 55 42	3213	42 21 36	3174	43 48 16	3139	45 15 38	3105

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11	Fomalhaut E.	36° 15' 32"	4233	35° 7' 37"	4323	34° 1' 6"	4426	32° 56' 8"	4541
	α Pegasi E.	54 29 1	3359	53 5 57	3371	51 43 7	3383	50 20 31	3397
	α Arietis E.	95 32 29	3083	94 3 58	3084	92 35 29	3083	91 6 59	3083
12	Spica W.	110 15 55	3071	111 44 40	3070	113 13 26	3069	114 42 13	3069
	Antares W.	64 24 28	3066	65 53 19	3065	67 22 11	3064	68 51 5	3063
	Fomalhaut E.	28 0 32	5409	27 8 44	5671	26 19 58	5979	25 34 32	6341
	α Pegasi E.	43 31 58	3488	42 11 20	3512	40 51 9	3538	39 31 27	3568
	α Arietis E.	83 44 28	3082	82 15 56	3081	80 47 23	3080	79 18 49	3078
	Aldebaran E.	115 25 47	3156	113 58 45	3152	112 31 39	3149	111 4 29	3147
13	Antares W.	76 16 0	3053	77 45 7	3051	79 14 16	3049	80 43 28	3047
	α Pegasi E.	33 2 21	3780	31 46 58	3842	30 32 39	3913	29 19 32	3997
	α Arietis E.	71 55 34	3071	70 26 49	3069	68 58 1	3067	67 29 11	3065
	Aldebaran E.	103 47 47	3131	102 20 15	3128	100 52 40	3125	99 25 1	3121
14	Antares W.	88 10 20	3030	89 39 55	3027	91 9 34	3024	92 39 17	3019
	α Aquilæ W.	44 12 3	4704	45 12 59	4614	46 15 12	4532	47 18 36	4455
	α Arietis E.	60 4 17	3052	58 35 8	3049	57 5 56	3046	55 36 40	3043
	Aldebaran E.	92 5 44	3104	90 37 39	3101	89 9 31	3097	87 41 18	3093
15	Antares W.	100 9 13	2997	101 39 29	2992	103 9 52	2987	104 40 21	2981
	α Aquilæ W.	52 51 11	4151	54 0 24	4102	55 10 24	4056	56 21 8	4014
	α Arietis E.	48 9 20	3026	46 39 39	3022	45 9 54	3018	43 40 4	3015
	Aldebaran E.	80 19 1	3074	78 50 19	3069	77 21 31	3064	75 52 38	3060
	Jupiter E.	116 57 10	3078	115 28 33	3073	113 59 50	3067	112 31 0	3061
16	Antares W.	112 14 36	2950	113 45 51	2944	115 17 14	2938	116 48 45	2931
	α Aquilæ W.	62 24 35	3836	63 39 0	3806	64 53 56	3777	66 9 22	3750
	Fomalhaut W.	36 45 41	4003	37 57 18	3927	39 10 10	3857	40 24 13	3793
	α Arietis E.	36 9 47	2997	34 39 31	2994	33 9 11	2992	31 38 48	2989
	Aldebaran E.	68 26 50	3038	66 57 24	3032	65 27 51	3027	63 58 12	3022
	Jupiter E.	105 4 59	3029	103 35 22	3022	102 5 37	3015	100 35 43	3007
	Pollux E.	110 47 29	2964	109 16 31	2956	107 45 23	2949	106 14 6	2942
17	α Aquilæ W.	72 33 9	3634	73 51 6	3614	75 9 26	3595	76 28 6	3576
	Fomalhaut W.	46 49 24	3545	48 8 58	3505	49 29 17	3468	50 50 17	3433
	α Arietis E.	24 6 26	2991	22 36 2	2996	21 5 44	3005	19 35 37	3017
	Aldebaran E.	56 28 29	2999	54 58 15	2994	53 27 55	2990	51 57 30	2985
	Jupiter E.	93 3 46	2967	91 32 52	2958	90 1 46	2949	88 30 29	2939
	Pollux E.	98 35 18	2901	97 3 1	2892	95 30 32	2884	93 57 53	2874
	Sun E.	132 14 2	3241	130 48 42	3231	129 23 10	3222	127 57 27	3213
18	α Aquilæ W.	83 6 17	3494	84 26 48	3479	85 47 35	3465	87 8 38	3453
	Fomalhaut W.	57 44 28	3284	59 8 59	3258	60 33 59	3232	61 59 30	3209
	α Pegasi W.	35 20 46	3398	36 43 5	3346	38 6 23	3298	39 30 37	3254
	Aldebaran E.	44 24 15	2971	42 53 26	2970	41 22 35	2970	39 51 44	2971
	Jupiter E.	80 50 58	2888	79 18 24	2878	77 45 37	2866	76 12 35	2855
	Pollux E.	86 11 30	2825	84 37 34	2814	83 3 25	2802	81 29 0	2792
	Sun E.	120 45 50	3158	119 18 51	3147	117 51 38	3134	116 24 10	3123
19	α Aquilæ W.	93 57 19	3395	95 19 41	3387	96 42 12	3378	98 4 54	3370
	Fomalhaut W.	69 13 54	3099	70 42 5	3079	72 10 41	3060	73 39 40	3039
	α Pegasi W.	46 43 41	3073	48 12 23	3043	49 41 42	3015	51 11 36	2987

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19	Aldebaran E.	38 20 54	2973	36 50 7	2977	35 19 25	2982	33 48 50	2990
	Jupiter E.	74 39 18	2843	73 5 46	2831	71 31 58	2819	69 57 54	2807
	Pollux E.	79 54 22	2780	78 19 28	2769	76 44 19	2757	75 8 54	2744
	SUN E.	114 56 28	3110	113 28 31	3097	112 0 18	3084	110 31 49	3071
20	α Aquilæ W.	99 27 45	3363	100 50 44	3357	102 13 50	3352	103 37 2	3347
	Fomalhaut W.	75 9 4	3020	76 38 52	3002	78 9 2	2984	79 39 35	2966
	α Pegasi W.	52 42 5	2960	54 13 8	2935	55 44 43	2910	57 16 49	2886
	Aldebaran E.	26 19 57	3094	24 51 40	3136	23 24 14	3191	21 57 54	3260
	Jupiter E.	62 3 25	2740	60 27 39	2726	58 51 33	2712	57 15 9	2698
	Pollux E.	67 7 40	2680	65 30 33	2666	63 53 8	2653	62 15 25	2638
	SUN E.	103 5 12	3000	101 34 59	2985	100 4 28	2970	98 33 37	2954
21	α Aquilæ W.	110 33 52	3344	111 57 13	3347	113 20 31	3352	114 43 42	3359
	Fomalhaut W.	87 17 51	2881	88 50 34	2866	90 23 37	2850	91 57 0	2835
	α Pegasi W.	65 4 50	2774	66 39 52	2753	68 15 22	2732	69 51 19	2712
	α Arietis W.	21 33 45	2660	23 11 19	2630	24 49 34	2603	26 28 25	2578
	Jupiter E.	49 8 19	2624	47 29 56	2609	45 51 13	2593	44 12 9	2578
	Pollux E.	54 2 0	2567	52 22 19	2553	50 42 19	2538	49 1 58	2523
	SUN E.	90 54 27	2875	89 21 36	2858	87 48 23	2841	86 14 48	2824
22	Fomalhaut W.	99 48 37	2767	101 23 48	2754	102 59 16	2743	104 34 58	2733
	α Pegasi W.	77 57 42	2615	79 36 16	2597	81 15 15	2579	82 54 38	2561
	α Arietis W.	34 50 46	2469	36 32 43	2449	38 15 8	2430	39 58 0	2411
	Jupiter E.	35 51 32	2502	34 10 21	2487	32 28 50	2472	30 46 58	2458
	Pollux E.	40 35 7	2450	38 52 44	2436	37 10 1	2422	35 26 58	2409
	SUN E.	78 21 22	2738	76 45 33	2720	75 9 20	2704	73 32 45	2687
23	Fomalhaut W.	112 36 38	2693	114 13 27	2689	115 50 22	2686	117 27 20	2685
	α Pegasi W.	91 17 31	2480	92 59 13	2465	94 41 16	2449	96 23 41	2435
	α Arietis W.	48 38 59	2321	50 24 28	2304	52 10 22	2287	53 56 40	2270
	Aldebaran W.	19 18 48	3018	20 48 38	2894	22 21 5	2791	23 55 45	2707
	Jupiter E.	22 12 50	2397	20 29 11	2389	18 45 20	2383	17 1 21	2381
	Pollux E.	26 47 13	2353	25 2 31	2345	23 17 37	2340	21 32 36	2338
	SUN E.	65 24 0	2600	63 45 5	2583	62 5 47	2567	60 26 7	2551
24	α Pegasi W.	105 0 25	2375	106 44 36	2364	108 29 2	2356	110 13 40	2348
	α Arietis W.	62 54 8	2193	64 42 46	2179	66 31 45	2165	68 21 6	2152
	Aldebaran W.	32 12 30	2432	33 55 20	2395	35 39 2	2362	37 23 32	2331
	SUN E.	52 2 9	2472	50 20 17	2458	48 38 4	2444	46 55 32	2429
25	α Pegasi W.	118 59 14	2325	120 44 37	2325	122 30 0	2326	124 15 21	2329
	α Arietis W.	77 32 39	2091	79 23 52	2081	81 15 20	2071	83 7 3	2062
	Aldebaran W.	46 15 54	2214	48 4 0	2196	49 52 33	2180	51 41 31	2164
	SUN E.	38 18 7	2368	36 33 46	2358	34 49 11	2348	33 4 21	2338
30	SUN W.	31 51 6	2509	33 32 6	2527	35 12 42	2544	36 52 54	2561
	Antares E.	59 26 50	2206	57 38 31	2222	55 50 36	2238	54 3 5	2255
	α Aquilæ E.	110 43 54	2982	109 13 19	2981	107 42 43	2983	106 12 9	2986
31	SUN W.	45 7 38	2656	46 45 17	2676	48 22 29	2695	49 59 16	2715
	Antares E.	45 11 54	2343	43 26 57	2362	41 42 28	2380	39 58 24	2398
	α Aquilæ E.	98 41 5	3029	97 11 29	3042	95 42 8	3056	94 13 4	3072

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^b .	P.L. of diff.	XVIII ^b .	P.L. of diff.	XXI ^b .	P.L. of diff.
19	Aldebaran E.	32 18 25	3002	30 48 14	3017	29 18 22	3036	27 48 54	3061
	Jupiter E.	68 23 35	2793	66 48 58	2781	65 14 5	2757	63 38 54	2753
	Pollux E.	73 33 13	2732	71 57 15	2719	70 21 1	2706	68 44 29	2693
	SUN E.	109 3 4	3057	107 34 2	3043	106 4 43	3029	104 35 6	3015
20	α Aquilæ W.	105 0 19	3344	106 23 40	3342	107 47 3	3340	109 10 28	3341
	Fomalhaut W.	81 10 31	2948	82 41 49	2931	84 13 29	2915	85 45 29	2898
	α Pegasi W.	58 49 26	2862	60 22 33	2839	61 56 10	2817	63 30 16	2795
	Aldebaran E.	20 32 56	3351	19 9 44	3471	17 48 47	3631	16 30 46	3846
	Jupiter E.	55 38 27	2683	54 1 24	2669	52 24 2	2654	50 46 21	2639
	Pollux E.	60 37 22	2625	58 59 1	2610	57 20 20	2596	55 41 20	2582
	SUN E.	97 2 27	2939	95 30 58	2923	93 59 8	2907	92 26 58	2891
21	α Aquilæ W.	16 6 45	3368	117 29 38	3380	118 52 17	3395	120 14 39	3413
	Fomalhaut W.	93 30 43	2821	95 4 44	2806	96 39 4	2792	98 13 42	2779
	α Pegasi W.	71 27 43	2692	73 4 34	2672	74 41 51	2653	76 19 34	2634
	α Arietis W.	28 7 50	2554	29 47 49	2532	31 28 18	2510	33 9 17	2489
	Jupiter E.	42 32 44	2563	40 52 58	2547	39 12 50	2532	37 32 22	2517
	Pollux E.	47 21 17	2508	45 40 15	2494	43 58 53	2479	42 17 10	2465
	SUN E.	84 40 51	2808	83 6 33	2790	81 31 52	2772	79 56 48	2756
22	Fomalhaut W.	106 10 54	2723	107 47 4	2714	109 23 25	2706	110 59 57	2699
	α Pegasi W.	84 34 26	2545	86 14 37	2527	87 55 12	2510	89 36 11	2495
	α Arietis E.	41 41 19	2392	43 25 5	2374	45 9 17	2356	46 53 55	2338
	Jupiter E.	29 4 46	2444	27 22 14	2431	25 39 23	2419	23 56 15	2407
	Pollux E.	33 43 36	2396	31 59 55	2384	30 15 57	2373	28 31 43	2362
	SUN E.	71 55 47	2669	70 18 25	2652	68 40 40	2634	67 2 31	2618
23	Fomalhaut W.	119 4 21	2685	120 41 21	2687	122 18 19	2692	123 55 10	2699
	α Pegasi W.	98 6 25	2422	99 49 28	2409	101 32 50	2397	103 16 29	2385
	α Arietis W.	55 43 23	2254	57 30 30	2239	59 18 0	2223	61 5 53	2208
	Aldebaran W.	25 32 16	2635	27 10 24	2574	28 49 55	2521	30 30 40	2474
	Jupiter E.	15 17 19	2385	13 33 22	2398	11 49 44	2425	10 6 45	2480
	Pollux E.	19 47 32	2340	18 2 31	2348	16 17 42	2365	14 33 17	2396
	SUN E.	58 46 4	2534	57 5 38	2518	55 24 50	2502	53 43 40	2487
24	α Pegasi W.	111 58 30	2341	113 43 30	2335	115 28 38	2330	117 13 54	2327
	α Arietis W.	70 10 46	2138	72 0 47	2126	73 51 6	2114	75 41 44	2103
	Aldebaran W.	39 8 46	2304	40 54 40	2278	42 41 12	2255	44 28 17	2234
	SUN E.	45 12 39	2416	43 29 28	2403	41 45 58	2391	40 2 11	2380
25	α Pegasi W.	126 0 38	2335	127 45 46	2343	129 30 43	2353	131 15 25	2366
	α Arietis W.	84 59 0	2054	86 51 10	2046	88 43 32	2039	90 36 6	2032
	Aldebaran W.	53 30 52	2150	55 20 35	2138	57 10 36	2126	59 0 55	2116
	SUN E.	31 19 17	2330	29 34 2	2322	27 48 35	2315	26 2 57	2309
30	SUN W.	38 32 42	2580	40 12 4	2599	41 51 1	2618	43 29 32	2636
	Antares E.	52 16 0	2272	50 29 20	2289	48 43 5	2307	46 57 16	2326
	α Aquilæ E.	104 41 39	2992	103 11 16	2999	101 41 1	3007	100 10 57	3017
31	SUN W.	51 35 36	2735	53 11 29	2755	54 46 56	2775	56 21 57	2795
	Antares E.	38 14 47	2417	36 31 37	2436	34 48 54	2455	33 6 37	2473
	α Aquilæ E.	92 44 20	3088	91 15 56	3106	89 47 53	3125	88 20 14	3144

CONFIGURATIONS OF THE SATELLITES OF JUPITER,

At 17^h, MEAN TIME.

Day of the Month.	West.	East.
1	4 [•] -1	○ 3 [•] ② [•] 2
2	4 [•]	○ 1 [•] 3 [•] 2 [•]
3	4 [•] 3 [•] 2 [•]	○ ② [•] 1
4	4 3 [•] 2 [•]	○ 1 [•]
5	3 [•] 4 [•]	○ 1 [•] 2 [•]
6	1 [•] -1	○ 3 [•] 2 [•]
7	2 [•]	○ 1 [•] 3 [•]
8	1 [•] 2 [•]	○ 3 [•] 4 [•]
9		○ 1 [•] 3 [•] 4 [•]
10	2 [•] ○ 3 [•] 1 [•]	○ 4 [•]
11	3 [•] 2 [•] 1 [•]	○ 4 [•]
12	3 [•]	○ 1 [•] 2 [•] 4 [•]
13	3 [•]	○ 2 [•] 4 [•]
14	2 [•]	○ 4 [•] 1 [•] 3 [•]
15	4 [•] 1 [•] 2 [•]	○ 3 [•]
16	4 [•]	○ 1 [•] 3 [•]
17	4 [•] -1 3 [•]	○ 2 [•]
18	4 [•] 3 [•] 2 [•]	○ 1 [•]
19	4 [•] 3 [•]	○ 2 [•] ② [•] 1
20	4 [•] 3 [•] 1 [•]	○ 2 [•]
21	4 [•] 2 [•]	○ 1 [•] 3 [•]
22	4 [•] 1 [•] 2 [•]	○ 3 [•]
23		○ 4 [•] 1 [•] 2 [•] 3 [•]
24	3 [•] ○ 1 [•]	○ 2 [•] 4 [•]
25	3 [•] 2 [•]	○ 1 [•] 4 [•]
26	2 [•] ② [•] 3 [•]	○ 4 [•]
27	1 [•] ○ 3 [•]	○ 2 [•] 4 [•]
28	2 [•]	○ 1 [•] 3 [•] 4 [•]
29	2 [•] 1 [•]	○ 3 [•] 4 [•]
30		○ 1 [•] 4 [•] 3 [•]

This Table represents, at 17^h after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h 44 ^m 03 ^s .	From Mean Noon of January 1.	
							Day of the Year.	Fraction of the Year.*
	A	B	C	D				
1	+1 ^h 1632	+1 ^h 1101	+0 ^h 0189	-0 ^h 8288	9 17 29 ^s 57	223	304	·8323
2	1 ^h 1570	1 ^h 1193	0 ^h 0201	0 ^h 8272	9 13 33 ^s 66	224	305	·8351
3	1 ^h 1504	1 ^h 1282	0 ^h 0213	0 ^h 8256	9 9 37 ^s 75	225	306	·8378
4	+1 ^h 1437	+1 ^h 1367	+0 ^h 0225	-0 ^h 8240	9 5 41 ^s 84	226	307	·8405
5	1 ^h 1367	1 ^h 1450	0 ^h 0237	0 ^h 8224	9 1 45 ^s 93	227	308	·8433
6	1 ^h 1295	1 ^h 1530	0 ^h 0249	0 ^h 8207	8 57 50 ^s 02	228	309	·8460
7	+1 ^h 1220	+1 ^h 1607	+0 ^h 0261	-0 ^h 8190	8 53 54 ^s 11	229	310	·8488
8	1 ^h 1142	1 ^h 1682	0 ^h 0273	0 ^h 8174	8 49 58 ^s 20	230	311	·8515
9	1 ^h 1061	1 ^h 1754	0 ^h 0285	0 ^h 8157	8 46 2 ^s 29	231	312	·8542
10	+1 ^h 0978	+1 ^h 1824	+0 ^h 0298	-0 ^h 8141	8 42 6 ^s 38	232	313	·8570
11	1 ^h 0891	1 ^h 1891	0 ^h 0310	0 ^h 8124	8 38 10 ^s 47	233	314	·8597
12	1 ^h 0802	1 ^h 1956	0 ^h 0322	0 ^h 8107	8 34 14 ^s 56	234	315	·8624
13	+1 ^h 0709	+1 ^h 2018	+0 ^h 0335	-0 ^h 8091	8 30 18 ^s 65	235	316	·8652
14	1 ^h 0612	1 ^h 2079	0 ^h 0348	0 ^h 8074	8 26 22 ^s 74	236	317	·8679
15	1 ^h 0512	1 ^h 2137	0 ^h 0361	0 ^h 8058	8 22 26 ^s 83	237	318	·8707
16	+1 ^h 0408	+1 ^h 2194	+0 ^h 0373	-0 ^h 8041	8 18 30 ^s 91	238	319	·8734
17	1 ^h 0300	1 ^h 2248	0 ^h 0386	0 ^h 8025	8 14 35 ^s 00	239	320	·8761
18	1 ^h 0188	1 ^h 2300	0 ^h 0399	0 ^h 8008	8 10 39 ^s 09	240	321	·8789
19	+1 ^h 0072	+1 ^h 2350	+0 ^h 0412	-0 ^h 7992	8 6 43 ^s 18	241	322	·8816
20	0 ^h 9951	1 ^h 2399	0 ^h 0425	0 ^h 7976	8 2 47 ^s 27	242	323	·8843
21	0 ^h 9825	1 ^h 2446	0 ^h 0439	0 ^h 7960	7 58 51 ^s 36	243	324	·8871
22	+0 ^h 9694	+1 ^h 2490	+0 ^h 0452	-0 ^h 7944	7 54 55 ^s 45	244	325	·8898
23	0 ^h 9557	1 ^h 2533	0 ^h 0465	0 ^h 7928	7 50 59 ^s 54	245	326	·8926
24	0 ^h 9414	1 ^h 2575	0 ^h 0479	0 ^h 7913	7 47 3 ^s 62	246	327	·8953
25	+0 ^h 9265	+1 ^h 2614	+0 ^h 0492	-0 ^h 7897	7 43 7 ^s 71	247	328	·8980
26	0 ^h 9109	1 ^h 2652	0 ^h 0506	0 ^h 7882	7 39 11 ^s 80	248	329	·9008
27	0 ^h 8946	1 ^h 2688	0 ^h 0520	0 ^h 7867	7 35 15 ^s 89	249	330	·9035
28	+0 ^h 8776	+1 ^h 2723	+0 ^h 0533	-0 ^h 7853	7 31 19 ^s 98	250	331	·9062
29	0 ^h 8596	1 ^h 2756	0 ^h 0547	0 ^h 7839	7 27 24 ^s 07	251	332	·9090
30	0 ^h 8408	1 ^h 2787	0 ^h 0561	0 ^h 7824	7 23 28 ^s 15	252	333	·9117
31	+0 ^h 8209	+1 ^h 2817	+0 ^h 0575	-0 ^h 7811	7 19 32 ^s 24	253	334	·9145

* Add .0017 if Fraction be required for the time t, see page 363.

* Add 0017 if Fraction be required for the time t, see page 363.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiameter passing the Meridian.*	Equation of Time, to be subd. from added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Thur.	1	16 28 21.01	10.809	S. 21 47 17.1	23.06	1 10.27	10 52.75	0.950
Frid.	2	16 32 40.42	10.834	21 56 30.5	22.00	1 10.36	10 29.96	0.975
Sat.	3	16 37 0.45	10.858	22 5 18.6	20.93	1 10.44	10 6.56	0.999
Sun.	4	16 41 21.05	10.881	22 13 41.0	19.85	1 10.52	9 42.58	1.022
Mon.	5	16 45 42.21	10.904	22 21 37.6	18.77	1 10.60	9 18.05	1.045
Tues.	6	16 50 3.91	10.926	22 29 8.0	17.68	1 10.67	8 52.97	1.067
Wed.	7	16 54 26.13	10.947	22 36 12.2	16.57	1 10.74	8 27.37	1.087
Thur.	8	16 58 48.85	10.967	22 42 49.8	15.45	1 10.81	8 1.29	1.106
Frid.	9	17 3 12.04	10.985	22 49 0.6	14.33	1 10.87	7 34.74	1.125
Sat.	10	17 7 35.67	11.002	22 54 44.5	13.20	1 10.93	7 7.75	1.143
Sun.	11	17 11 59.72	11.018	23 0 1.3	12.06	1 10.98	6 40.33	1.159
Mon.	12	17 16 24.16	11.033	23 4 50.8	10.92	1 11.03	6 12.52	1.174
Tues.	13	17 20 48.98	11.048	23 9 12.8	9.77	1 11.08	5 44.34	1.188
Wed.	14	17 25 14.13	11.061	23 13 7.2	8.61	1 11.12	5 15.83	1.201
Thur.	15	17 29 39.60	11.073	23 16 33.8	7.45	1 11.16	4 46.99	1.213
Frid.	16	17 34 5.35	11.083	23 19 32.5	6.28	1 11.19	4 17.88	1.223
Sat.	17	17 38 31.35	11.092	23 22 3.2	5.11	1 11.22	3 48.51	1.232
Sun.	18	17 42 57.57	11.100	23 24 5.8	3.93	1 11.24	3 18.94	1.240
Mon.	19	17 47 23.97	11.106	23 25 40.2	2.75	1 11.26	2 49.18	1.246
Tues.	20	17 51 50.51	11.111	23 26 46.3	1.57	1 11.27	2 19.28	1.251
Wed.	21	17 56 17.16	11.114	23 27 24.2	0.39	1 11.28	1 49.27	1.254
Thur.	22	18 0 43.89	11.115	23 27 33.6	0.79	1 11.29	1 19.18	1.255
Frid.	23	18 5 10.64	11.115	23 27 14.7	1.97	1 11.29	0 49.07	1.255
Sat.	24	18 9 37.39	11.113	23 26 27.4	3.15	1 11.28	0 18.96	1.253
Sun.	25	18 14 4.09	11.109	23 25 11.8	4.33	1 11.27	0 11.10	1.249
Mon.	26	18 18 30.71	11.104	23 23 27.8	5.51	1 11.26	0 41.08	1.244
Tues.	27	18 22 57.21	11.097	23 21 15.6	6.68	1 11.25	1 10.93	1.237
Wed.	28	18 27 23.54	11.089	23 18 35.3	7.85	1 11.23	1 40.62	1.229
Thur.	29	18 31 49.67	11.079	23 15 26.8	9.02	1 11.20	2 10.11	1.220
Frid.	30	18 36 15.56	11.068	23 11 50.4	10.18	1 11.17	2 39.38	1.208
Sat.	31	18 40 41.19	11.055	23 7 46.1	11.34	1 11.13	3 8.37	1.195
Sun.	32	18 45 6.52		S. 23 3 14.0		1 11.09	3 37.06	

* Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to subtr. from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Thur.	1	16 28 22.97	S. 21 47 21.2	16 15.8	10 52.58	16 39 15.55
Frid.	2	16 32 42.32	21 56 34.3	16 16.0	10 29.79	16 43 12.11
Sat.	3	16 37 2.28	22 5 22.1	16 16.1	10 6.40	16 47 8.67
Sun.	4	16 41 22.81	22 13 44.2	16 16.2	9 42.42	16 51 5.23
Mon.	5	16 45 43.90	22 21 40.5	16 16.4	9 17.89	16 55 1.79
Tues.	6	16 50 5.53	22 29 10.7	16 16.5	8 52.82	16 58 58.35
Wed.	7	16 54 27.68	22 36 14.5	16 16.6	8 27.22	17 2 54.90
Thur.	8	16 58 50.32	22 42 51.8	16 16.8	8 1.14	17 6 51.46
Frid.	9	17 3 13.42	22 49 2.4	16 16.9	7 34.60	17 10 48.02
Sat.	10	17 7 36.97	22 54 46.1	16 17.0	7 7.61	17 14 44.58
Sun.	11	17 12 0.94	23 0 2.6	16 17.1	6 40.20	17 18 41.14
Mon.	12	17 16 25.30	23 4 51.9	16 17.2	6 12.40	17 22 37.70
Tues.	13	17 20 50.03	23 9 13.7	16 17.3	5 44.23	17 26 34.26
Wed.	14	17 25 15.10	23 13 7.9	16 17.4	5 15.72	17 30 30.82
Thur.	15	17 29 40.48	23 16 34.4	16 17.5	4 46.90	17 34 27.37
Frid.	16	17 34 6.14	23 19 32.9	16 17.6	4 17.79	17 38 23.93
Sat.	17	17 38 32.06	23 22 3.5	16 17.6	3 48.43	17 42 20.49
Sun.	18	17 42 58.18	23 24 6.0	16 17.7	3 18.87	17 46 17.05
Mon.	19	17 47 24.49	23 25 40.3	16 17.8	2 49.12	17 50 13.61
Tues.	20	17 51 50.94	23 26 46.4	16 17.8	2 19.23	17 54 10.17
Wed.	21	17 56 17.50	23 27 24.2	16 17.9	1 49.23	17 58 6.73
Thur.	22	18 0 44.13	23 27 33.6	16 17.9	1 19.15	18 2 3.28
Frid.	23	18 5 10.79	23 27 14.7	16 18.0	0 49.05	18 5 59.84
Sat.	24	18 9 37.45	23 26 27.4	16 18.0	0 18.95	18 9 56.40
Sun.	25	18.14 4.06	23 25 11.8	16 18.0	0 11.10	18 13 52.96
Mon.	26	18 18 30.59	23 23 27.9	16 18.1	0 41.07	18 17 49.52
Tues.	27	18.22 56.99	23 21 15.8	16 18.1	1 10.91	18 21 46.08
Wed.	28	18 27 23.23	23 18 35.5	16 18.1	1 40.59	18 25 42.64
Thur.	29	18 31 49.27	23 15 27.1	16 18.1	2 10.07	18 29 39.20
Frid.	30	18 36 15.08	23 11 50.8	16 18.1	2 39.33	18 33 35.75
Sat.	31	18 40 40.62	23 7 46.6	16 18.2	3 8.31	18 37 32.31
Sun.	32	18 45 5.86	S. 23 3 14.8	16 18.2	3 36.99	18 41 28.87

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	248° 48' 52.5"	S. 0° 21'	9.9937356	14° 48.5'	14° 49.2'	54° 13.2'	54° 15.6'
2	249° 49' 45.0"	S. 0° 08'	9.9936667	14° 50.5'	14° 52.6'	54° 20.6'	54° 28.3'
3	250° 50' 38.3"	N. 0° 03'	9.9935997	14° 55.4'	14° 58.9'	54° 38.6'	54° 51.3'
4	251° 51' 32.3"	0° 13'	9.9935348	15° 3.0'	15° 7.8'	55° 6.4'	55° 23.7'
5	252° 52' 27.0"	0° 21'	9.9934721	15° 13.0'	15° 18.7'	55° 42.9'	56° 3.9'
6	253° 53' 22.6"	0° 25'	9.9934117	15° 24.8'	15° 31.1'	56° 26.1'	56° 49.2'
7	254° 54' 18.9"	0° 26'	9.9933537	15° 37.5'	15° 44.0'	57° 12.8'	57° 36.5'
8	255° 55' 16.1"	0° 25'	9.9932982	15° 50.4'	15° 56.5'	57° 59.7'	58° 22.0'
9	256° 56' 14.0"	0° 20'	9.9932454	16° 2.1'	16° 7.3'	58° 42.8'	59° 1.7'
10	257° 57' 12.8"	0° 13'	9.9931955	16° 11.8'	16° 15.5'	59° 18.1'	59° 31.9'
11	258° 58' 12.4"	N. 0° 03'	9.9931483	16° 18.5'	16° 20.7'	59° 43.0'	59° 50.9'
12	259° 59' 12.9"	S. 0° 09'	9.9931037	16° 22.1'	16° 22.6'	59° 55.8'	59° 57.6'
13	261° 0' 14.4"	0° 21'	9.9930617	16° 22.3'	16° 21.2'	59° 56.6'	59° 52.8'
14	262° 1' 16.7"	0° 34'	9.9930222	16° 19.6'	16° 17.4'	59° 46.8'	59° 38.6'
15	263° 2' 20.0"	0° 46'	9.9929851	16° 14.6'	16° 11.5'	59° 28.6'	59° 17.3'
16	264° 3' 24.3"	0° 58'	9.9929504	16° 8.2'	16° 4.6'	59° 4.9'	58° 51.6'
17	265° 4' 29.5"	0° 68'	9.9929180	16° 0.8'	15° 56.9'	58° 37.8'	58° 23.5'
18	266° 5' 35.6"	0° 76'	9.9928877	15° 52.9'	15° 48.9'	58° 9.0'	57° 54.4'
19	267° 6' 42.4"	0° 81'	9.9928594	15° 44.9'	15° 40.9'	57° 39.7'	57° 25.0'
20	268° 7' 50.0"	0° 83'	9.9928330	15° 36.9'	15° 32.9'	57° 10.4'	56° 55.7'
21	269° 8' 58.3"	0° 82'	9.9928085	15° 28.9'	15° 25.0'	56° 41.2'	56° 26.7'
22	270° 10' 7.2"	0° 79'	9.9927858	15° 21.0'	15° 17.1'	56° 12.3'	55° 58.0'
23	271° 11' 16.6"	0° 72'	9.9927647	15° 13.3'	15° 9.6'	55° 44.1'	55° 30.4'
24	272° 12' 26.5"	0° 63'	9.9927453	15° 6.0'	15° 2.5'	55° 17.2'	55° 4.6'
25	273° 13' 36.7"	0° 51'	9.9927276	14° 59.3'	14° 56.3'	54° 52.7'	54° 41.8'
26	274° 14' 47.1"	0° 38'	9.9927116	14° 53.6'	14° 51.3'	54° 31.9'	54° 23.4'
27	275° 15' 57.6"	0° 25'	9.9926973	14° 49.3'	14° 47.9'	54° 16.3'	54° 10.9'
28	276° 17' 8.1"	S. 0° 11'	9.9926847	14° 46.9'	14° 46.5'	54° 7.3'	54° 5.7'
29	277° 18' 18.5"	N. 0° 02'	9.9926739	14° 46.6'	14° 47.4'	54° 6.3'	54° 9.2'
30	278° 19' 28.8"	0° 14'	9.9926651	14° 48.8'	14° 51.0'	54° 14.4'	54° 22.2'
31	279° 20' 39.0"	0° 25'	9.9926583	14° 53.8'	14° 57.3'	54° 32.5'	54° 45.3'
32	280° 21' 48.9"	N. 0° 32'	9.9926537	15° 1.5'	15° 6.4'	55° 0.7'	55° 18.6'

MEAN TIME.

THE MOON'S

Day of the Week.	Day of the Month.								
		Longitude.				Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
Thur.	1	327 11 44.6	333 5 28.6	N. 13 25.1	N. 13 25.1	6.9	5 25.6		
Frid.	2	339 0 7.5	344 56 23.1	2 12 45.6	2 40 36.8	7.9	6 5.7		
Sat.	3	350 54 55.8	356 56 26.6	3 6 52.5	3 31 16.5	8.9	6 45.5		
Sun.	4	3 1 33.3	9 10 50.9	3 53 30.8	4 13 17.9	9.9	7 26.3		
Mon.	5	15 24 51.0	21 44 0.8	4 30 19.6	4 44 17.8	10.9	8 9.1		
Tues.	6	28 8 41.7	34 39 9.1	4 54 54.4	5 1 52.8	11.9	8 55.4		
Wed.	7	41 15 30.7	47 57 46.3	5 4 57.0	5 3 54.0	12.9	9 46.2		
Thur.	8	54 45 47.7	61 39 18.2	4 58 33.2	4 48 48.6	13.9	10 42.0		
Frid.	9	68 37 52.8	75 40 59.9	4 34 39.8	4 16 10.2	14.9	11 42.3		
Sat.	10	82 48 0.9	89 58 12.8	3 53 31.3	3 26 59.6	15.9	12 45.0		
Sun.	11	97 10 49.9	104 25 5.6	2 56 58.4	2 23 56.5	16.9	13 47.5		
Mon.	12	111 40 13.8	118 55 31.3	1 48 28.1	N. 11 10.3	17.9	14 47.2		
Tues.	13	126 10 18.9	133 24 1.9	N. 0 32 43.1	S. 0 6 12.6	18.9	15 42.9		
Wed.	14	140 36 11.4	147 46 23.9	S. 0 44 56.0	1 22 47.8	19.9	16 34.7		
Thur.	15	154 54 21.2	161 59 50.0	1 59 10.8	2 33 31.1	20.9	17 23.7		
Frid.	16	169 2 41.2	176 2 48.3	3 5 18.0	3 34 5.0	21.9	18 11.2		
Sat.	17	183 0 8.1	189 54 38.1	3 59 29.7	4 21 13.7	22.9	18 58.6		
Sun.	18	196 46 17.0	203 35 3.7	4 39 2.2	4 52 45.3	23.9	19 47.0		
Mon.	19	210 20 56.9	217 3 54.7	5 2 16.4	5 7 33.1	24.9	20 37.3		
Tues.	20	223 43 54.5	230 20 53.0	5 8 36.5	5 5 31.1	25.9	21 29.9		
Wed.	21	236 54 46.3	243 25 30.5	4 58 24.8	4 47 28.3	26.9	22 24.4		
Thur.	22	249 53 1.3	256 17 15.5	4 32 55.4	4 15 2.4	27.9	23 19.5		
Frid.	23	262 38 10.4	268 55 45.1	3 54 7.3	3 30 29.6	28.9	24 0.0		
Sat.	24	275 10 1.2	281 21 2.3	3 4 30.3	2 36 31.4	0.3	0 13.6		
Sun.	25	287 28 54.9	293 33 48.9	2 6 55.4	1 36 3.6	1.3	1 5.3		
Mon.	26	299 35 57.2	305 35 36.5	S. 1 4 18.2	S. 0 32 0.4	2.3	1 53.8		
Tues.	27	311 33 6.5	317 28 50.3	N. 0 0 29.1	N. 0 32 51.0	3.3	2 39.0		
Wed.	28	323 23 13.9	329 16 46.1	1 4 46.2	1 35 56.6	4.3	3 21.3		
Thur.	29	335 9 58.5	341 3 24.6	2 6 5.4	2 34 55.7	5.3	4 1.7		
Frid.	30	346 57 39.9	352 53 21.7	3 2 11.6	3 27 36.9	6.3	4 41.2		
Sat.	31	358 51 7.7	4 51 36.6	3 50 56.7	4 11 55.3	7.3	5 20.8		
Sun.	32	10 55 26.9	17 3 15.9	N. 4 30 16.8	N. 4 45 46.0	8.3	6 1.7		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
THURSDAY 1.				SATURDAY 3.			
0	h m s 21 55 54.54	S. 11 18 19.5	124.68	0	h m s 23 21 42.96	S. 0 44 25.3	137.24
1	21 57 43.84	11 5 51.4	125.10	1	23 23 29.82	0 30 41.9	137.34
2	21 59 32.99	10 53 20.8	125.51	2	23 25 16.74	0 16 57.8	137.44
3	22 1 21.99	10 40 47.7	125.91	3	23 27 3.73	S. 0 3 13.1	137.53
4	22 3 10.85	10 28 12.2	126.30	4	23 28 50.79	N. 0 10 32.1	137.62
5	22 4 59.56	10 15 34.3	126.69	5	23 30 37.91	0 24 17.9	137.70
6	22 6 48.14	10 2 54.2	127.07	6	23 32 25.12	0 38 4.1	137.77
7	22 8 36.59	9 50 11.7	127.44	7	23 34 12.42	0 51 50.7	137.83
8	22 10 24.91	9 37 27.0	127.81	8	23 35 59.80	1 5 37.7	137.89
9	22 12 13.11	9 24 40.1	128.17	9	23 37 47.27	1 19 25.1	137.94
10	22 14 1.19	9 11 51.1	128.53	10	23 39 34.84	1 33 12.7	137.98
11	22 15 49.16	8 58 59.9	128.87	11	23 41 22.51	1 47 0.6	138.02
12	22 17 37.01	8 46 6.6	129.21	12	23 43 10.30	2 0 48.8	138.04
13	22 19 24.76	8 33 11.3	129.54	13	23 44 58.20	2 14 37.1	138.07
14	22 21 12.40	8 20 14.0	129.87	14	23 46 46.21	2 28 25.5	138.08
15	22 22 59.95	8 7 14.8	130.19	15	23 48 34.34	2 42 14.0	138.09
16	22 24 47.41	7 54 13.6	130.51	16	23 50 22.60	2 56 2.6	138.09
17	22 26 34.77	7 41 10.5	130.82	17	23 52 11.00	3 9 51.2	138.08
18	22 28 22.05	7 28 5.6	131.12	18	23 53 59.52	3 23 39.7	138.07
19	22 30 9.25	7 14 58.8	131.41	19	23 55 48.19	3 37 28.1	138.04
20	22 31 56.38	7 1 50.3	131.70	20	23 57 37.01	3 51 16.4	138.01
21	22 33 43.43	6 48 40.0	131.99	21	23 59 25.97	4 5 4.5	137.98
22	22 35 30.42	6 35 28.1	132.26	22	0 1 15.10	4 18 52.4	137.93
23	22 37 17.34	S. 6 22 14.5	132.53	23	0 3 4.38	N. 4 32 40.0	137.88
FRIDAY 2.				SUNDAY 4.			
0	22 39 4.20	S. 6 8 59.2	132.80	0	0 4 53.83	N. 4 46 27.3	137.82
1	22 40 51.01	5 55 42.3	133.06	1	0 6 43.45	5 0 14.2	137.75
2	22 42 37.77	5 42 23.9	133.31	2	0 8 33.24	5 14 0.7	137.67
3	22 44 24.48	5 29 4.0	133.56	3	0 10 23.22	5 27 46.8	137.59
4	22 46 11.15	5 15 42.6	133.80	4	0 12 13.37	5 41 32.4	137.49
5	22 47 57.79	5 2 19.8	134.03	5	0 14 3.72	5 55 17.3	137.39
6	22 49 44.40	4 48 55.6	134.26	6	0 15 54.26	6 9 1.7	137.28
7	22 51 30.97	4 35 30.0	134.48	7	0 17 45.00	6 22 45.5	137.16
8	22 53 17.53	4 22 3.1	134.69	8	0 19 35.95	6 36 28.5	137.04
9	22 55 4.06	4 8 35.0	134.90	9	0 21 27.10	6 50 10.7	136.90
10	22 56 50.59	3 55 5.6	135.10	10	0 23 18.47	7 3 52.2	136.76
11	22 58 37.10	3 41 35.0	135.29	11	0 25 10.05	7 17 32.7	136.60
12	23 0 23.60	3 28 3.2	135.47	12	0 27 1.86	7 31 12.4	136.44
13	23 2 10.11	3 14 30.3	135.65	13	0 28 53.90	7 44 51.1	136.27
14	23 3 56.61	3 0 56.4	135.83	14	0 30 46.17	7 58 28.8	136.09
15	23 5 43.13	2 47 21.4	136.00	15	0 32 38.68	8 12 5.3	135.90
16	23 7 29.67	2 33 45.4	136.16	16	0 34 31.44	8 25 40.8	135.71
17	23 9 16.22	2 20 8.4	136.32	17	0 36 24.44	8 39 15.1	135.50
18	23 11 2.79	2 6 30.4	136.47	18	0 38 17.70	8 52 48.1	135.28
19	23 12 49.39	1 52 51.6	136.61	19	0 40 11.21	9 6 19.8	135.05
20	23 14 36.02	1 39 11.9	136.75	20	0 42 4.99	9 19 50.1	134.82
21	23 16 22.69	1 25 31.4	136.88	21	0 43 59.03	9 33 19.1	134.57
22	23 18 9.40	1 11 50.1	137.00	22	0 45 53.34	9 46 46.5	134.31
23	23 19 56.16	0 58 8.0	137.12	23	0 47 47.93	10 0 12.4	134.05
24	23 21 42.96	S. 0 44 25.3		24	0 49 42.81	N. 10 13 36.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 5.				WEDNESDAY 7.			
	<i>h m s</i>	<i>N. ° ' "</i>	<i>"</i>		<i>h m s</i>	<i>N. ° ' "</i>	<i>"</i>
0	0 49 42.81	N. 10 13 36.7	133.77	0	2 28 35.68	N. 20 2 43.2	105.95
1	0 51 37.97	10 26 59.3	133.48	1	2 30 49.58	20 13 18.9	105.02
2	0 53 33.42	10 40 20.3	133.18	2	2 33 3.94	20 23 49.1	104.06
3	0 55 29.17	10 53 39.4	132.87	3	2 35 18.77	20 34 13.5	103.10
4	0 57 25.22	11 6 56.7	132.55	4	2 37 34.08	20 44 32.1	102.11
5	0 59 21.58	11 20 12.0	132.22	5	2 39 49.86	20 54 44.8	101.11
6	1 1 18.25	11 33 25.4	131.88	6	2 42 6.11	21 4 51.5	100.09
7	1 3 15.23	11 46 36.7	131.53	7	2 44 22.83	21 14 52.1	99.06
8	1 5 12.53	11 59 45.9	131.17	8	2 46 40.03	21 24 46.5	98.01
9	1 7 10.16	12 12 53.0	130.79	9	2 48 57.71	21 34 34.5	96.94
10	1 9 8.11	12 25 57.8	130.41	10	2 51 15.87	21 44 16.2	95.86
11	1 11 6.40	12 39 0.2	130.01	11	2 53 34.50	21 53 51.4	94.75
12	1 13 5.02	12 52 0.3	129.60	12	2 55 53.62	22 3 19.9	93.63
13	1 15 3.99	13 4 57.9	129.18	13	2 58 13.21	22 12 41.7	92.50
14	1 17 3.30	13 17 53.0	128.74	14	3 0 33.27	22 21 56.7	91.34
15	1 19 2.97	13 30 45.5	128.30	15	3 2 53.82	22 31 4.8	90.17
16	1 21 3.00	13 43 35.3	127.84	16	3 5 14.83	22 40 5.9	88.98
17	1 23 3.38	13 56 22.4	127.37	17	3 7 36.33	22 48 59.8	87.78
18	1 25 4.13	14 9 6.7	126.89	18	3 9 58.30	22 57 46.5	86.56
19	1 27 5.25	14 21 48.0	126.39	19	3 12 20.74	23 6 25.9	85.32
20	1 29 6.75	14 34 26.4	125.89	20	3 14 43.65	23 14 57.8	84.06
21	1 31 8.62	14 47 1.8	125.37	21	3 17 7.03	23 23 22.2	82.79
22	1 33 10.88	14 59 34.0	124.83	22	3 19 30.89	23 31 39.0	81.50
23	1 35 13.52	N. 15 12 3.1	124.29	23	3 21 55.21	N. 23 39 48.0	80.19
TUESDAY 6.				THURSDAY 8.			
	<i>h m s</i>	<i>N. ° ' "</i>	<i>"</i>		<i>h m s</i>	<i>N. ° ' "</i>	<i>"</i>
0	1 37 16.54	N. 15 24 28.8	123.73	0	3 24 19.99	N. 23 47 49.2	78.87
1	1 39 19.96	15 36 51.2	123.16	1	3 26 45.24	23 55 42.4	77.53
2	1 41 23.79	15 49 10.2	122.57	2	3 29 10.95	24 3 27.6	76.17
3	1 43 28.01	16 1 25.6	121.97	3	3 31 37.12	24 11 4.7	74.79
4	1 45 32.64	16 13 37.5	121.35	4	3 34 3.74	24 18 33.5	73.40
5	1 47 37.68	16 25 45.6	120.73	5	3 36 30.81	24 25 53.9	72.00
6	1 49 43.13	16 37 50.0	120.08	6	3 38 58.33	24 33 5.9	70.57
7	1 51 49.00	16 49 50.6	119.43	7	3 41 26.29	24 40 9.4	69.13
8	1 53 55.29	17 1 47.1	118.75	8	3 43 54.69	24 47 4.2	67.67
9	1 56 2.00	17 13 39.7	118.07	9	3 46 23.53	24 53 50.3	66.20
10	1 58 9.14	17 25 28.1	117.37	10	3 48 52.80	25 0 27.5	64.71
11	2 0 16.71	17 37 12.4	116.65	11	3 51 22.50	25 6 55.8	63.21
12	2 2 24.72	17 48 52.3	115.92	12	3 53 52.61	25 13 15.1	61.69
13	2 4 33.16	18 0 27.8	115.17	13	3 56 23.15	25 19 25.3	60.15
14	2 6 42.05	18 11 58.9	114.41	14	3 58 54.10	25 25 26.2	58.60
15	2 8 51.38	18 23 25.4	113.64	15	4 1 25.46	25 31 17.9	57.03
16	2 11 1.15	18 34 47.3	112.84	16	4 3 57.23	25 37 0.1	55.45
17	2 13 11.37	18 46 4.4	112.04	17	4 6 29.38	25 42 32.8	53.85
18	2 15 22.04	18 57 16.6	111.21	18	4 9 1.93	25 47 56.0	52.24
19	2 17 33.17	19 8 23.9	110.38	19	4 11 34.86	25 53 9.4	50.61
20	2 19 44.75	19 19 26.2	109.52	20	4 14 8.16	25 58 13.1	48.97
21	2 21 56.79	19 30 23.4	108.65	21	4 16 41.84	26 3 7.0	47.32
22	2 24 9.29	19 41 15.3	107.77	22	4 19 15.88	26 7 51.0	45.65
23	2 26 22.26	19 52 2.0	106.87	23	4 21 50.27	26 12 24.9	43.97
24	2 28 35.68	N. 20 2 43.2		24	4 24 25.02	N. 26 16 48.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
FRIDAY 9.				SUNDAY 11.			
0	h m s	N. 26 16 48.8	42.27	0	h m s	N. 26 12 34.2	47.25
1	4 24 25.02	26 21 2.5	40.56	1	6 31 59.48	26 7 50.7	49.10
2	4 27 0.11	26 25 5.9	38.84	2	6 34 39.38	26 2 56.0	50.95
3	4 29 35.54	26 28 59.0	37.11	3	6 37 19.11	25 57 50.3	52.80
4	4 32 11.28	26 32 41.7	35.37	4	6 39 58.68	25 52 33.5	54.63
5	4 34 47.35	26 36 13.9	33.61	5	6 42 38.07	25 47 5.7	56.45
6	4 37 23.73	26 39 35.6	31.84	6	6 45 17.27	25 41 26.9	58.27
7	4 40 0.40	26 42 46.7	30.07	7	6 47 56.28	25 35 37.3	60.07
8	4 42 37.37	26 45 47.1	28.28	8	6 50 35.08	25 29 36.8	61.87
9	4 45 14.62	26 48 36.8	26.48	9	6 53 13.67	25 23 25.6	63.65
10	4 47 52.15	26 51 15.7	24.67	10	6 55 52.04	25 17 3.7	65.43
11	4 50 29.93	26 53 43.8	22.85	11	6 58 30.18	25 10 31.1	67.19
12	4 53 7.98	26 56 0.9	21.02	12	7 1 8.07	25 3 47.9	68.94
13	4 55 46.27	26 58 7.1	19.19	13	7 3 45.72	24 56 54.2	70.68
14	4 58 24.80	27 0 2.2	17.34	14	7 6 23.12	24 49 50.1	72.40
15	5 1 3.55	27 1 46.3	15.49	15	7 9 0.26	24 42 35.7	74.12
16	5 3 42.52	27 3 19.3	13.63	16	7 11 37.12	24 35 10.9	75.82
17	5 6 21.70	27 4 41.1	11.76	17	7 14 13.70	24 27 36.0	77.51
18	5 9 1.07	27 5 51.7	9.89	18	7 16 50.01	24 19 50.9	79.18
19	5 11 40.62	27 6 51.1	8.01	19	7 19 26.02	24 11 55.8	80.84
20	5 14 20.35	27 7 39.2	6.12	20	7 22 1.74	24 3 50.7	82.49
21	5 17 0.25	27 8 15.9	4.23	21	7 24 37.15	23 55 35.8	84.12
22	5 19 40.29	27 8 41.3	2.33	22	7 27 12.26	23 47 11.0	85.74
23	5 22 20.48	N. 27 8 55.4	0.43	23	7 29 47.05	N. 23 38 36.6	87.34
24	5 25 0.81			24	7 32 21.52		
SATURDAY 10.				MONDAY 12.			
0	5 27 41.25	N. 27 8 58.0	1.47	0	7 34 55.67	N. 23 29 52.5	88.93
1	5 30 21.81	27 8 49.2	3.38	1	7 37 29.48	23 20 58.9	90.50
2	5 33 2.46	27 8 28.9	5.29	2	7 40 2.96	23 11 55.9	92.06
3	5 35 43.20	27 7 57.1	7.21	3	7 42 36.10	23 2 43.5	93.60
4	5 38 24.02	27 7 13.8	9.12	4	7 45 8.90	22 53 21.9	95.12
5	5 41 4.90	27 6 19.1	11.04	5	7 47 41.34	22 43 51.2	96.63
6	5 43 45.84	27 5 12.8	12.96	6	7 50 13.44	22 34 11.4	98.12
7	5 46 26.82	27 3 54.9	14.89	7	7 52 45.18	22 24 22.6	99.59
8	5 49 7.84	27 2 25.6	16.81	8	7 55 16.55	22 14 25.0	101.05
9	5 51 48.87	27 0 44.7	18.73	9	7 57 47.57	22 4 18.7	102.49
10	5 54 29.92	26 58 52.3	20.65	10	8 0 18.22	21 54 3.7	103.92
11	5 57 10.97	26 56 48.4	22.57	11	8 2 48.50	21 43 40.2	105.32
12	5 59 52.00	26 54 32.9	24.50	12	8 5 18.41	21 33 8.2	106.71
13	6 2 33.01	26 52 5.9	26.41	13	8 7 47.95	21 22 27.9	108.08
14	6 5 13.99	26 49 27.4	28.33	14	8 10 17.11	21 11 39.4	109.44
15	6 7 54.92	26 46 37.4	30.24	15	8 12 45.89	21 0 42.7	110.77
16	6 10 35.79	26 43 35.9	32.15	16	8 15 14.29	20 49 38.1	112.09
17	6 13 16.59	26 40 23.0	34.05	17	8 17 42.31	20 38 25.5	113.39
18	6 15 57.32	26 36 58.7	35.95	18	8 20 9.95	20 27 5.1	114.67
19	6 18 37.96	26 33 22.9	37.85	19	8 22 37.20	20 15 37.0	115.94
20	6 21 18.50	26 29 35.8	39.74	20	8 25 4.07	20 4 1.4	117.19
21	6 23 58.94	26 25 37.3	41.63	21	8 27 30.55	19 52 18.2	118.41
22	6 26 39.25	26 21 27.5	43.50	22	8 29 56.65	19 40 27.7	119.62
23	6 29 19.44	26 17 6.5	45.38	23	8 32 22.36	19 28 29.9	120.82
24	6 31 59.48	N. 26 12 34.2		24	8 34 47.69	N. 19 16 25.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 13.				THURSDAY 15.			
0	h m s	N. ° ' "	"	0	h m s	N. ° ' "	"
0	8 34 47.69	N. 19 16 25.0	121.99	0	10 24 4.39	N. 7 52 14.5	157.02
1	8 37 12.63	19 4 13.0	123.14	1	10 26 13.61	7 36 32.3	157.34
2	8 39 37.18	18 51 54.2	124.28	2	10 28 22.59	7 20 48.3	157.63
3	8 42 1.35	18 39 28.5	125.40	3	10 30 31.36	7 5 2.4	157.92
4	8 44 25.13	18 26 56.1	126.49	4	10 32 39.90	6 49 14.9	158.18
5	8 46 48.53	18 14 17.1	127.57	5	10 34 48.23	6 33 25.8	158.43
6	8 49 11.55	18 1 31.6	128.64	6	10 36 56.36	6 17 35.1	158.67
7	8 51 34.18	17 48 39.7	129.68	7	10 39 4.28	6 1 43.1	158.89
8	8 53 56.43	17 35 41.6	130.71	8	10 41 12.00	5 45 49.7	159.09
9	8 56 18.30	17 22 37.4	131.71	9	10 43 19.53	5 29 55.1	159.28
10	8 58 39.80	17 9 27.1	132.70	10	10 45 26.87	5 13 59.4	159.46
11	9 1 0.92	16 56 10.8	133.67	11	10 47 34.03	4 58 2.6	159.62
12	9 3 21.66	16 42 48.8	134.62	12	10 49 41.01	4 42 4.9	159.76
13	9 5 42.03	16 29 21.1	135.55	13	10 51 47.82	4 26 6.3	159.89
14	9 8 2.03	16 15 47.7	136.46	14	10 53 54.47	4 10 6.9	160.01
15	9 10 21.66	16 2 8.9	137.36	15	10 56 0.95	3 54 6.8	160.11
16	9 12 40.93	15 48 24.7	138.24	16	10 58 7.28	3 38 6.1	160.20
17	9 14 59.83	15 34 35.3	139.10	17	11 0 13.46	3 22 4.9	160.27
18	9 17 18.37	15 20 40.7	139.94	18	11 2 19.50	3 6 3.2	160.33
19	9 19 36.55	15 6 41.0	140.76	19	11 4 25.39	2 50 1.2	160.38
20	9 21 54.38	14 52 36.4	141.56	20	11 6 31.15	2 33 58.9	160.41
21	9 24 11.86	14 38 27.0	142.35	21	11 8 36.78	2 17 56.5	160.42
22	9 26 28.99	14 24 12.9	143.12	22	11 10 42.28	2 1 53.9	160.42
23	9 28 45.77	N. 14 9 54.1	143.87	23	11 12 47.67	N. 1 45 51.3	160.41
WEDNESDAY 14.				FRIDAY 16.			
0	9 31 2.21	N. 13 55 30.9	144.60	0	11 14 52.93	N. 1 29 48.8	160.39
1	9 33 18.31	13 41 3.3	145.32	1	11 16 58.09	1 13 46.4	160.35
2	9 35 34.08	13 26 31.3	146.01	2	11 19 3.15	0 57 44.3	160.30
3	9 37 49.52	13 11 55.2	146.69	3	11 21 8.11	0 41 42.5	160.23
4	9 40 4.63	12 57 15.0	147.35	4	11 23 12.98	0 25 41.1	160.15
5	9 42 19.41	12 42 30.9	148.00	5	11 25 17.76	N. 0 9 40.2	160.06
6	9 44 33.88	12 27 42.9	148.63	6	11 27 22.46	S. 0 6 20.2	159.95
7	9 46 48.03	12 12 51.1	149.23	7	11 29 27.09	0 22 20.0	159.83
8	9 49 1.87	11 57 55.6	149.83	8	11 31 31.64	0 38 19.0	159.70
9	9 51 15.40	11 42 56.7	150.40	9	11 33 36.12	0 54 17.3	159.56
10	9 53 28.62	11 27 54.2	150.96	10	11 35 40.55	1 10 14.6	159.40
11	9 55 41.55	11 12 48.4	151.50	11	11 37 44.92	1 26 11.0	159.23
12	9 57 54.18	10 57 39.4	152.02	12	11 39 49.24	1 42 6.4	159.04
13	10 0 6.52	10 42 27.2	152.53	13	11 41 53.52	1 58 0.7	158.84
14	10 2 18.57	10 27 12.0	153.02	14	11 43 57.75	2 13 53.8	158.63
15	10 4 30.35	10 11 53.9	153.49	15	11 46 1.96	2 29 45.6	158.41
16	10 6 41.84	9 56 32.9	153.95	16	11 48 6.13	2 45 36.1	158.17
17	10 8 53.06	9 41 9.2	154.39	17	11 50 10.27	3 1 25.2	157.92
18	10 11 4.02	9 25 42.8	154.81	18	11 52 14.40	3 17 12.7	157.66
19	10 13 14.71	9 10 13.9	155.22	19	11 54 18.52	3 32 58.7	157.39
20	10 15 25.14	8 54 42.5	155.62	20	11 56 22.62	3 48 43.1	157.10
21	10 17 35.32	8 39 8.8	155.99	21	11 58 26.72	4 4 25.7	156.80
22	10 19 45.26	8 23 32.8	156.35	22	12 0 30.82	4 20 6.5	156.49
23	10 21 54.94	8 7 54.7	156.70	23	12 2 34.93	4 35 45.5	156.16
24	10 24 4.39	N. 7 52 14.5		24	12 4 39.04	S. 4 51 22.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SATURDAY 17.				MONDAY 19.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	12 4 39.04	S. 4 51 22.5	155.82	0	13 45 36.41	S. 16 18 55.4	125.47
1	12 6 43.17	5 6 57.5	155.47	1	13 47 46.24	16 31 28.3	124.55
2	12 8 47.32	5 22 30.4	155.11	2	13 49 56.27	16 43 55.6	123.63
3	12 10 51.50	5 38 1.1	154.74	3	13 52 6.50	16 56 17.4	122.68
4	12 12 55.71	5 53 29.5	154.35	4	13 54 16.93	17 8 33.5	121.73
5	12 14 59.95	6 8 55.6	153.95	5	13 56 27.57	17 20 44.0	120.77
6	12 17 4.23	6 24 19.3	153.54	6	13 58 38.41	17 32 48.6	119.80
7	12 19 8.56	6 39 40.6	153.11	7	14 0 49.46	17 44 47.4	118.81
8	12 21 12.93	6 54 59.3	152.68	8	14 3 0.72	17 56 40.3	117.82
9	12 23 17.36	7 10 15.4	152.23	9	14 5 12.19	18 8 27.2	116.81
10	12 25 21.85	7 25 28.8	151.77	10	14 7 23.87	18 20 8.1	115.79
11	12 27 26.40	7 40 39.4	151.29	11	14 9 35.76	18 31 42.9	114.76
12	12 29 31.01	7 55 47.2	150.81	12	14 11 47.86	18 43 11.5	113.72
13	12 31 35.70	8 10 52.1	150.31	13	14 14 0.18	18 54 33.9	112.67
14	12 33 40.47	8 25 54.0	149.80	14	14 16 12.72	19 5 49.9	111.61
15	12 35 45.32	8 40 52.8	149.28	15	14 18 25.47	19 16 59.6	110.54
16	12 37 50.25	8 55 48.5	148.75	16	14 20 38.44	19 28 2.9	109.45
17	12 39 55.27	9 10 41.0	148.20	17	14 22 51.63	19 38 59.6	108.36
18	12 42 0.39	9 25 30.3	147.64	18	14 25 5.04	19 49 49.8	107.26
19	12 44 5.60	9 40 16.1	147.08	19	14 27 18.67	20 0 33.4	106.14
20	12 46 10.92	9 54 58.6	146.49	20	14 29 32.51	20 11 10.3	105.02
21	12 48 16.34	10 9 37.6	145.90	21	14 31 46.57	20 21 40.4	103.88
22	12 50 21.87	10 24 13.1	145.30	22	14 34 0.86	20 32 3.7	102.74
23	12 52 27.52	S. 10 38 44.9	144.68	23	14 36 15.36	S. 20 42 20.2	101.58
SUNDAY 18.				TUESDAY 20.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	12 54 33.28	S. 10 53 13.0	144.05	0	14 38 30.08	S. 20 52 29.7	100.42
1	12 56 39.17	11 7 37.4	143.41	1	14 40 45.02	21 2 32.2	99.24
2	12 58 45.18	11 21 57.9	142.76	2	14 43 0.17	21 12 27.7	98.05
3	13 0 51.32	11 36 14.5	142.10	3	14 45 15.54	21 22 16.0	96.86
4	13 2 57.60	11 50 27.1	141.42	4	14 47 31.12	21 31 57.2	95.65
5	13 5 4.01	12 4 35.7	140.74	5	14 49 46.92	21 41 31.2	94.44
6	13 7 10.57	12 18 40.1	140.04	6	14 52 2.94	21 50 57.8	93.21
7	13 9 17.27	12 32 40.4	139.33	7	14 54 19.16	22 0 17.1	91.98
8	13 11 24.12	12 46 36.4	138.60	8	14 56 35.60	22 9 29.0	90.73
9	13 13 31.12	13 0 28.0	137.87	9	14 58 52.25	22 18 33.4	89.48
10	13 15 38.27	13 14 15.3	137.12	10	15 1 9.11	22 27 30.3	88.22
11	13 17 45.58	13 27 58.0	136.37	11	15 3 26.17	22 36 19.7	86.95
12	13 19 53.06	13 41 36.3	135.60	12	15 5 43.45	22 45 1.4	85.67
13	13 22 0.70	13 55 9.9	134.82	13	15 8 0.93	22 53 35.4	84.38
14	13 24 8.51	14 8 38.9	134.03	14	15 10 18.60	23 2 1.7	83.08
15	13 26 16.48	14 22 3.0	133.22	15	15 12 36.47	23 10 20.3	81.77
16	13 28 24.63	14 35 22.4	132.41	16	15 14 54.54	23 18 30.9	80.46
17	13 30 32.96	14 48 36.9	131.58	17	15 17 12.81	23 26 33.7	79.14
18	13 32 41.47	15 1 46.4	130.74	18	15 19 31.26	23 34 28.6	77.80
19	13 34 50.16	15 14 50.9	129.89	19	15 21 49.91	23 42 15.4	76.46
20	13 36 59.03	15 27 50.2	129.03	20	15 24 8.74	23 49 54.2	75.12
21	13 39 8.09	15 40 44.4	128.16	21	15 26 27.76	23 57 25.0	73.76
22	13 41 17.34	15 53 33.4	127.27	22	15 28 46.95	24 4 47.6	72.40
23	13 43 26.77	16 6 17.1	126.38	23	15 31 6.33	24 12 2.0	71.03
24	13 45 36.41	S. 16 18 55.4		24	15 33 25.88	S. 24 19 8.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
WEDNESDAY 21.				FRIDAY 23.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	15 33 25.88	S. 24 19 8.2	69.65	0	17 26 57.03	S. 27 9 0.4	1.24
1	15 35 45.60	24 26 6.1	68.27	1	17 29 18.97	27 8 52.9	2.73
2	15 38 5.49	24 32 55.8	66.88	2	17 31 40.80	27 8 36.6	4.21
3	15 40 25.53	24 39 37.1	65.48	3	17 34 2.53	27 8 11.3	5.69
4	15 42 45.74	24 46 10.0	64.07	4	17 36 24.15	27 7 37.1	7.17
5	15 45 6.10	24 52 34.4	62.66	5	17 38 45.64	27 6 54.0	8.64
6	15 47 26.62	24 58 50.4	61.24	6	17 41 7.00	27 6 2.2	10.11
7	15 49 47.27	25 4 57.9	59.82	7	17 43 28.23	27 5 1.5	11.58
8	15 52 8.08	25 10 56.8	58.39	8	17 45 49.33	27 3 52.0	13.04
9	15 54 29.02	25 16 47.2	56.95	9	17 48 10.28	27 2 33.7	14.49
10	15 56 50.10	25 22 29.0	55.51	10	17 50 31.08	27 1 6.7	15.94
11	15 59 11.30	25 28 2.1	54.07	11	17 52 51.72	26 59 31.0	17.39
12	16 1 32.63	25 33 26.5	52.62	12	17 55 12.20	26 57 46.7	18.83
13	16 3 54.08	25 38 42.2	51.16	13	17 57 32.51	26 55 53.7	20.26
14	16 6 15.65	25 43 49.2	49.70	14	17 59 52.65	26 53 52.1	21.69
15	16 8 37.32	25 48 47.4	48.23	15	18 2 12.61	26 51 41.9	23.11
16	16 10 59.11	25 53 36.8	46.76	16	18 4 32.39	26 49 23.2	24.53
17	16 13 20.99	25 58 17.4	45.29	17	18 6 51.97	26 46 56.0	25.94
18	16 15 42.96	26 2 49.2	43.81	18	18 9 11.36	26 44 20.4	27.34
19	16 18 5.02	26 7 12.1	42.33	19	18 11 30.55	26 41 36.3	28.74
20	16 20 27.17	26 11 26.1	40.84	20	18 13 49.53	26 38 43.9	30.12
21	16 22 49.39	26 15 31.2	39.36	21	18 16 8.31	26 35 43.1	31.51
22	16 25 11.69	26 19 27.4	37.86	22	18 18 26.86	26 32 34.0	32.88
23	16 27 34.05	S. 26 23 14.6	36.37	23	18 20 45.20	S. 26 29 16.7	34.25
THURSDAY 22.				SATURDAY 24.			
	^h ^m ^s	[°] ['] ["]	["]		^h ^m ^s	[°] ['] ["]	["]
0	16 29 56.47	S. 26 26 52.8	34.87	0	18 23 3.31	S. 26 25 51.2	35.61
1	16 32 18.95	26 30 22.1	33.37	1	18 25 21.19	26 22 17.5	36.96
2	16 34 41.48	26 33 42.3	31.87	2	18 27 38.83	26 18 35.7	38.31
3	16 37 4.05	26 36 53.6	30.37	3	18 29 56.24	26 14 45.9	39.64
4	16 39 26.66	26 39 55.8	28.86	4	18 32 13.40	26 10 48.0	40.97
5	16 41 49.30	26 42 49.0	27.36	5	18 34 30.31	26 6 42.1	42.29
6	16 44 11.97	26 45 33.2	25.85	6	18 36 46.97	26 2 28.4	43.60
7	16 46 34.65	26 48 8.3	24.34	7	18 39 3.38	25 58 6.7	44.90
8	16 48 57.35	26 50 34.4	22.83	8	18 41 19.52	25 53 37.3	46.20
9	16 51 20.06	26 52 51.4	21.32	9	18 43 35.40	25 49 0.1	47.48
10	16 53 42.76	26 54 59.3	19.81	10	18 45 51.02	25 44 15.1	48.76
11	16 56 5.46	26 56 58.2	18.30	11	18 48 6.36	25 39 22.5	50.03
12	16 58 28.14	26 58 48.0	16.79	12	18 50 21.43	25 34 22.3	51.29
13	17 0 50.80	27 0 28.7	15.28	13	18 52 36.22	25 29 14.5	52.54
14	17 3 13.44	27 2 0.4	13.77	14	18 54 50.73	25 23 59.3	53.78
15	17 5 36.05	27 3 23.1	12.26	15	18 57 4.96	25 18 36.6	55.01
16	17 7 58.62	27 4 36.6	10.75	16	18 59 18.90	25 13 6.5	56.23
17	17 10 21.14	27 5 41.2	9.24	17	19 1 32.55	25 7 29.1	57.44
18	17 12 43.61	27 6 36.7	7.74	18	19 3 45.91	25 1 44.4	58.65
19	17 15 6.03	27 7 23.1	6.24	19	19 5 58.98	24 55 52.5	59.84
20	17 17 28.38	27 8 0.6	4.73	20	19 8 11.74	24 49 53.5	61.02
21	17 19 50.66	27 8 29.0	3.24	21	19 10 24.21	24 43 47.3	62.20
22	17 22 12.87	27 8 48.5	1.74	22	19 12 36.37	24 37 34.1	63.36
23	17 24 34.99	27 8 58.9	0.24	23	19 14 48.24	24 31 13.9	64.51
24	17 26 57.03	S. 27 9 0.4		24	19 16 59.79	S. 24 24 46.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 25.				TUESDAY 27.			
0	h m s 19 16 59.79	S. 24 24 46.8	65.66	0	h m s 20 56 3.08	S. 17 19 29.3	108.52
1	19 19 11.04	24 18 12.8	66.79	1	20 57 59.44	17 8 38.1	109.17
2	19 21 21.97	24 11 32.0	67.92	2	20 59 55.53	16 57 43.1	109.81
3	19 23 32.60	24 4 44.5	69.03	3	21 1 51.35	16 46 44.2	110.44
4	19 25 42.91	23 57 50.3	70.13	4	21 3 46.89	16 35 41.5	111.07
5	19 27 52.91	23 50 49.4	71.23	5	21 5 42.17	16 24 35.1	111.68
6	19 30 2.60	23 43 42.1	72.31	6	21 7 37.19	16 13 25.0	112.28
7	19 32 11.96	23 36 28.2	73.38	7	21 9 31.95	16 2 11.2	112.88
8	19 34 21.01	23 29 7.8	74.45	8	21 11 26.44	15 50 53.9	113.46
9	19 36 29.74	23 21 41.1	75.50	9	21 13 20.69	15 39 33.1	114.04
10	19 38 38.16	23 14 8.1	76.54	10	21 15 14.68	15 28 8.9	114.61
11	19 40 46.25	23 6 28.9	77.57	11	21 17 8.42	15 16 41.2	115.17
12	19 42 54.01	22 58 43.4	78.59	12	21 19 1.92	15 5 10.1	115.72
13	19 45 1.46	22 50 51.8	79.60	13	21 20 55.17	14 53 35.7	116.26
14	19 47 8.58	22 42 54.2	80.60	14	21 22 48.19	14 41 58.1	116.80
15	19 49 15.38	22 34 50.6	81.59	15	21 24 40.96	14 30 17.3	117.32
16	19 51 21.86	22 26 41.0	82.57	16	21 26 33.51	14 18 33.3	117.84
17	19 53 28.01	22 18 25.6	83.54	17	21 28 25.82	14 6 46.3	118.35
18	19 55 33.85	22 10 4.3	84.50	18	21 30 17.91	13 54 56.1	118.85
19	19 57 39.36	22 1 37.3	85.44	19	21 32 9.77	13 43 3.0	119.34
20	19 59 44.55	21 53 4.6	86.38	20	21 34 1.42	13 31 6.9	119.83
21	20 1 49.42	21 44 26.3	87.31	21	21 35 52.84	13 19 7.9	120.30
22	20 3 53.97	21 35 42.4	88.23	22	21 37 44.05	13 7 6.1	120.77
23	20 5 58.19	S. 21 26 53.0	89.13	23	21 39 35.06	S. 12 55 1.4	121.23
MONDAY 26.				WEDNESDAY 28.			
0	20 8 2.10	S. 21 17 58.2	90.03	0	21 41 25.86	S. 12 42 54.0	121.68
1	20 10 5.69	21 8 58.0	90.91	1	21 43 16.45	12 30 43.9	122.12
2	20 12 8.96	20 59 52.5	91.79	2	21 45 6.85	12 18 31.1	122.56
3	20 14 11.91	20 50 41.7	92.65	3	21 46 57.05	12 6 15.7	122.99
4	20 16 14.54	20 41 25.8	93.51	4	21 48 47.07	11 53 57.7	123.41
5	20 18 16.86	20 32 4.7	94.35	5	21 50 36.89	11 41 37.3	123.82
6	20 20 18.87	20 22 38.5	95.19	6	21 52 26.53	11 29 14.3	124.23
7	20 22 20.56	20 13 7.3	96.01	7	21 54 15.99	11 16 48.9	124.63
8	20 24 21.95	20 3 31.2	96.83	8	21 56 5.27	11 4 21.1	125.02
9	20 26 23.02	19 53 50.2	97.63	9	21 57 54.38	10 51 50.9	125.40
10	20 28 23.78	19 44 4.4	98.43	10	21 59 43.32	10 39 18.5	125.78
11	20 30 24.24	19 34 13.8	99.21	11	22 1 32.09	10 26 43.8	126.15
12	20 32 24.39	19 24 18.5	99.99	12	22 3 20.70	10 14 6.9	126.51
13	20 34 24.24	19 14 18.6	100.75	13	22 5 9.16	10 1 27.8	126.86
14	20 36 23.78	19 4 14.0	101.50	14	22 6 57.46	9 48 46.6	127.21
15	20 38 23.03	18 54 5.0	102.25	15	22 8 45.62	9 36 3.3	127.55
16	20 40 21.98	18 43 51.5	102.98	16	22 10 33.63	9 23 18.0	127.88
17	20 42 20.63	18 33 33.5	103.71	17	22 12 21.49	9 10 30.7	128.21
18	20 44 18.99	18 23 11.2	104.43	18	22 14 9.22	8 57 41.4	128.53
19	20 46 17.05	18 12 44.6	105.13	19	22 15 56.82	8 44 50.2	128.84
20	20 48 14.83	18 2 13.8	105.83	20	22 17 44.28	8 31 57.1	129.14
21	20 50 12.32	17 51 38.8	106.52	21	22 19 31.62	8 19 2.3	129.44
22	20 52 9.52	17 40 59.7	107.19	22	22 21 18.84	8 6 5.6	129.73
23	20 54 6.45	17 30 16.5	107.86	23	22 23 5.95	7 53 7.2	130.01
24	20 56 3.08	S. 17 19 29.3		24	22 24 52.93	S. 7 40 7.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
THURSDAY 29.				SATURDAY 31.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>N. ° ' "</i>	<i>"</i>
0	22 24 52.93	S. 7 40 7.1	130.29	0	23 49 39.29	N. 3 4 25.9	135.92
1	22 26 39.81	7 27 5.4	130.56	1	23 51 26.06	3 18 1.5	135.88
2	22 28 26.58	7 14 2.0	130.82	2	23 53 12.93	3 31 36.8	135.83
3	22 30 13.26	7 0 57.1	131.07	3	23 54 59.92	3 45 11.8	135.78
4	22 31 59.83	6 47 50.6	131.32	4	23 56 47.03	3 58 46.5	135.72
5	22 33 46.32	6 34 42.6	131.57	5	23 58 34.26	4 12 20.9	135.65
6	22 35 32.71	6 21 33.2	131.80	6	0 0 21.62	4 25 54.8	135.57
7	22 37 19.02	6 8 22.3	132.03	7	0 2 9.11	4 39 28.2	135.49
8	22 39 5.25	5 55 10.1	132.26	8	0 3 56.75	4 53 1.2	135.40
9	22 40 51.41	5 41 56.5	132.47	9	0 5 44.52	5 6 33.6	135.30
10	22 42 37.50	5 28 41.7	132.68	10	0 7 32.44	5 20 5.5	135.20
11	22 44 23.51	5 15 25.5	132.89	11	0 9 20.52	5 33 36.7	135.09
12	22 46 9.46	5 2 8.2	133.08	12	0 11 8.75	5 47 7.2	134.96
13	22 47 55.36	4 48 49.7	133.27	13	0 12 57.15	6 0 37.0	134.84
14	22 49 41.20	4 35 30.0	133.46	14	0 14 45.71	6 14 6.1	134.70
15	22 51 26.99	4 22 9.2	133.64	15	0 16 34.44	6 27 34.3	134.56
16	22 53 12.74	4 8 47.4	133.81	16	0 18 23.35	6 41 1.7	134.41
17	22 54 58.44	3 55 24.5	133.97	17	0 20 12.44	6 54 28.3	134.26
18	22 56 44.11	3 42 0.6	134.13	18	0 22 1.72	7 7 53.8	134.09
19	22 58 29.75	3 28 35.8	134.28	19	0 23 51.20	7 21 18.4	133.92
20	23 0 15.36	3 15 10.1	134.43	20	0 25 40.86	7 34 42.0	133.74
21	23 2 0.94	3 1 43.5	134.57	21	0 27 30.73	7 48 4.5	133.56
22	23 3 46.51	2 48 16.0	134.70	22	0 29 20.81	8 1 25.9	133.36
23	23 5 32.06	S. 2 34 47.8	134.83	23	0 31 11.09	N. 8 14 46.0	133.16
FRIDAY 30.				SUNDAY, JAN. 1, 1860.			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>N. ° ' "</i>	<i>"</i>
0	23 7 17.59	S. 2 21 18.8	134.95	0	0 33 1.59	N. 8 28 5.0	
1	23 9 3.13	2 7 49.1	135.06				
2	23 10 48.66	1 54 18.7	135.17				
3	23 12 34.20	1 40 47.7	135.27				
4	23 14 19.75	1 27 16.0	135.36				
5	23 16 5.30	1 13 43.8	135.45				
6	23 17 50.88	1 0 11.1	135.53				
7	23 19 36.48	0 46 37.9	135.61				
8	23 21 22.10	0 33 4.2	135.68				
9	23 23 7.75	0 19 30.1	135.74				
10	23 24 53.44	S. 0 5 55.6	135.80				
11	23 26 39.17	N. 0 7 39.3	135.85				
12	23 28 24.93	0 21 14.4	135.90				
13	23 30 10.75	0 34 49.8	135.94				
14	23 31 56.62	0 48 25.5	135.97				
15	23 33 42.55	1 2 1.3	135.99				
16	23 35 28.54	1 15 37.3	136.01				
17	23 37 14.60	1 29 13.4	136.02				
18	23 39 0.73	1 42 49.6	136.03				
19	23 40 46.94	1 56 25.8	136.03				
20	23 42 33.23	2 10 2.0	136.02				
21	23 44 19.61	2 23 38.1	136.01				
22	23 46 6.07	2 37 14.2	135.98				
23	23 47 52.63	2 50 50.1	135.96				
24	23 49 39.29	N. 3 4 25.9					

PHASES OF THE MOON.

	<i>d h m</i>
☾ First Quarter	- 2 1 49.9
○ Full Moon	- 9 15 12.6
☾ Last Quarter	- 16 9 15.3
● New Moon	- 23 17 47.2
☾ First Quarter	- 31 22 47.7

	<i>d h</i>
☾ Perigee	- - - - 12 14
☾ Apogee	- - - - 28 15

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	78 23 2	3479	79 43 49	3478	81 4 38	3477	82 25 28	3475
	α Arietis E.	68 38 0	3093	67 9 42	3092	65 41 22	3091	64 13 2	3090
	Aldebaran E.	100 42 42	3144	99 15 26	3143	97 48 8	3141	96 20 48	3139
2	SUN W.	89 10 25	3456	90 31 38	3452	91 52 56	3446	93 14 21	3439
	α Aquilæ W.	46 2 41	4494	47 6 38	4421	48 11 40	4353	49 17 44	4289
	α Arietis E.	56 50 47	3077	55 22 9	3073	53 53 27	3069	52 24 39	3065
	Aldebaran E.	89 3 20	3122	87 35 37	3118	86 7 49	3112	84 39 54	3108
3	SUN W.	100 3 23	3400	101 25 39	3391	102 48 6	3381	104 10 44	3371
	α Aquilæ W.	55 1 46	4025	56 13 1	3981	57 24 59	3939	58 37 39	3899
	α Arietis E.	44 59 7	3036	43 29 39	3029	42 0 2	3022	40 30 16	3015
	Aldebaran E.	77 18 36	3074	75 49 55	3067	74 21 5	3060	72 52 6	3051
4	SUN W.	111 6 57	3314	112 30 52	3301	113 55 2	3288	115 19 28	3275
	α Aquilæ W.	64 50 35	3725	66 6 56	3694	67 23 49	3664	68 41 14	3635
	Fomalhaut W.	39 27 11	3887	40 40 44	3816	41 55 30	3750	43 11 24	3690
	Aldebaran E.	65 24 29	3006	63 54 24	2996	62 24 6	2986	60 53 36	2977
	Pollux E.	107 37 6	2939	106 5 36	2927	104 33 51	2914	103 1 50	2901
	Jupiter E.	111 22 29	2898	109 50 8	2887	108 17 33	2874	106 44 41	2862
5	SUN W.	122 25 38	3203	123 51 43	3188	125 18 7	3173	126 44 49	3158
	α Aquilæ W.	75 15 43	3507	76 36 0	3483	77 56 43	3460	79 17 52	3438
	Fomalhaut W.	49 45 39	3442	51 7 8	3401	52 29 23	3362	53 52 23	3324
	α Pegasi W.	27 38 20	3745	28 54 19	3643	30 12 7	3552	31 31 34	3471
	Aldebaran E.	53 18 0	2927	51 46 15	2917	50 14 18	2908	48 42 9	2899
	Pollux E.	95 17 33	2834	93 43 49	2819	92 9 45	2804	90 35 23	2789
	Jupiter E.	98 56 10	2794	97 21 34	2779	95 46 39	2765	94 11 25	2750
6	α Aquilæ W.	86 9 29	3340	87 32 54	3322	88 56 40	3306	90 20 45	3290
	Fomalhaut W.	60 57 41	3160	62 24 38	3130	63 52 11	3102	65 20 18	3075
	α Pegasi W.	38 28 53	3168	39 55 40	3121	41 23 24	3078	42 52 0	3038
	Aldebaran E.	40 58 47	2863	39 25 41	2859	37 52 30	2857	36 19 16	2856
	Pollux E.	82 38 33	2713	81 2 10	2697	79 25 26	2681	77 48 21	2665
	Jupiter E.	86 10 13	2673	84 32 57	2657	82 55 19	2641	81 17 19	2625
	Saturn E.	117 41 33	2702	116 4 56	2686	114 27 57	2670	112 50 37	2654
7	Fomalhaut W.	72 48 53	2953	74 20 5	2930	75 51 46	2909	77 23 53	2888
	α Pegasi W.	50 26 42	2867	51 59 44	2838	53 33 23	2809	55 7 39	2782
	Aldebaran E.	28 34 2	2900	27 1 43	2924	25 29 54	2956	23 58 46	2999
	Pollux E.	69 37 35	2587	67 58 22	2571	66 18 47	2556	64 38 51	2540
	Jupiter E.	73 1 53	2545	71 21 42	2529	69 41 9	2512	68 0 13	2497
	Saturn E.	104 38 28	2572	102 58 55	2557	101 19 1	2541	99 38 45	2525
8	Fomalhaut W.	85 10 47	2797	86 45 19	2782	88 20 11	2767	89 55 23	2753
	α Pegasi W.	63 7 16	2665	64 44 43	2644	66 22 39	2624	68 1 1	2604
	Pollux E.	56 13 59	2467	54 32 0	2454	52 49 42	2441	51 7 5	2428
	Jupiter E.	59 30 8	2421	57 47 3	2405	56 3 36	2391	54 19 49	2378
	Saturn E.	91 11 54	2448	89 29 28	2433	87 46 40	2419	86 3 33	2404
	Regulus E.	93 4 21	2447	91 21 53	2432	89 39 4	2418	87 55 55	2404
9	α Pegasi W.	76 19 7	2520	77 59 52	2505	79 40 58	2492	81 22 23	2479
	α Arietis W.	33 4 34	2387	34 48 28	2371	36 32 45	2355	38 17 25	2340

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
1	Sun W.	83 46 20	3472	85 7 15	3469	86 28 14	3465	87 49 17	3461
	α Arietis E.	62 44 40	3089	61 16 17	3086	59 47 50	3083	58 19 20	3081
	Aldebaran E.	94 53 26	3136	93 26 0	3134	91 58 31	3130	90 30 58	3126
2	Sun W.	94 35 53	3432	95 57 33	3425	97 19 21	3418	98 41 17	3409
	α Aquilæ W.	50 24 47	4230	51 32 45	4174	52 41 36	4181	53 51 17	4072
	α Arietis E.	50 55 46	3060	49 26 47	3054	47 57 41	3048	46 28 28	3042
	Aldebaran E.	83 11 54	3102	81 43 46	3095	80 15 30	3089	78 47 7	3082
3	Sun W.	105 33 33	3361	106 56 34	3350	108 19 48	3338	109 43 16	3326
	α Aquilæ W.	59 51 0	3861	61 4 59	3825	62 19 35	3790	63 34 48	3757
	α Arietis E.	39 0 22	3008	37 30 19	3001	36 0 7	2993	34 29 46	2986
	Aldebaran E.	71 22 56	3043	69 53 36	3034	68 24 5	3025	66 54 23	3015
4	Sun W.	116 44 9	3261	118 9 6	3247	119 34 19	3232	120 59 50	3218
	α Aquilæ W.	69 59 10	3608	71 17 36	3582	72 36 30	3556	73 55 53	3531
	Fomalhaut W.	44 28 21	3634	45 46 18	3582	47 5 12	3533	48 25 0	3487
	Aldebaran E.	59 22 54	2967	57 52 0	2956	56 20 52	2947	54 49 33	2936
	Pollux E.	101 29 33	2888	99 56 59	2875	98 24 8	2862	96 51 0	2847
	Jupiter E.	105 11 33	2849	103 38 9	2835	102 4 27	2821	100 30 27	2808
5	Sun W.	128 11 49	3142	129 39 8	3125	131 6 47	3110	132 34 44	3094
	α Aquilæ W.	80 39 25	3417	82 1 22	3397	83 23 42	3378	84 46 24	3358
	Fomalhaut W.	55 16 6	3288	56 40 31	3254	58 5 36	3221	59 31 20	3190
	α Pegasi W.	32 52 31	3399	34 14 49	3333	35 38 22	3273	37 3 5	3218
	Aldebaran E.	47 9 49	2891	45 37 18	2883	44 4 37	2875	42 31 46	2869
	Pollux E.	89 0 41	2774	87 25 39	2759	85 50 18	2744	84 14 36	2728
	Jupiter E.	92 35 51	2735	90 59 58	2719	89 23 43	2704	87 47 9	2688
6	α Aquilæ W.	91 45 8	3275	93 9 49	3261	94 34 46	3248	95 59 59	3236
	Fomalhaut W.	66 48 58	3048	68 18 11	3023	69 47 59	2999	71 18 9	2975
	α Pegasi W.	44 21 26	2999	45 51 40	2963	47 22 39	2930	48 54 20	2898
	Aldebaran E.	34 46 1	2858	33 12 48	2862	31 39 41	2870	30 6 44	2882
	Pollux E.	76 10 54	2649	74 33 6	2634	72 54 57	2618	71 16 27	2602
	Jupiter E.	79 38 58	2609	78 0 15	2593	76 21 10	2577	74 41 43	2560
	Saturn E.	111 12 55	2637	109 34 51	2621	107 56 25	2606	106 17 38	2589
7	Fomalhaut W.	78 56 27	2869	80 29 26	2849	82 2 50	2831	83 36 37	2814
	α Pegasi W.	56 42 30	2757	58 17 54	2733	59 53 50	2709	61 30 18	2687
	Aldebaran E.	22 28 31	3057	20 59 28	3133	19 31 58	3234	18 6 29	3371
	Pollux E.	62 58 34	2525	61 17 56	2510	59 36 57	2496	57 55 38	2482
	Jupiter E.	66 18 56	2481	64 37 16	2466	62 55 15	2450	61 12 52	2436
	Saturn E.	97 58 6	2509	96 17 6	2493	94 35 43	2478	92 53 59	2463
8	Fomalhaut W.	91 30 53	2739	93 6 42	2727	94 42 46	2715	96 19 6	2704
	α Pegasi W.	69 39 50	2586	71 19 4	2569	72 58 42	2552	74 38 43	2535
	Pollux E.	49 24 10	2415	47 40 56	2403	45 57 26	2391	44 13 39	2380
	Jupiter E.	52 35 42	2364	50 51 15	2350	49 6 28	2337	47 21 22	2324
	Saturn E.	84 20 4	2391	82 36 16	2377	80 52 8	2364	79 7 41	2351
	Regulus E.	86 12 26	2390	84 28 37	2376	82 44 28	2364	81 0 1	2350
9	α Pegasi W.	83 4 6	2466	84 46 7	2455	86 28 23	2444	88 10 56	2434
	α Arietis W.	40 2 26	2326	41 47 47	2314	43 33 26	2301	45 19 24	2289
	Pollux E.	35 31 7	2337	33 46 2	2331	32 0 47	2327	30 15 27	2323

MEAN TIME.											
LUNAR DISTANCE											
Day of the Month.	Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.	
			° ' "		° ' "		° ' "		° ' "		
9	Jupiter	E.	45 35 58	2312	43 50 16	2299	42 4 15	2288	40 17 58	2277	
	Saturn	E.	77 22 56	2338	75 37 52	2326	73 52 30	2315	72 6 52	2303	
	Regulus	E.	79 15 14	2338	77 30 10	2325	75 44 47	2314	73 59 8	2302	
10	α Pegasi	W.	89 53 42	2425	91 36 41	2416	93 19 53	2409	95 3 15	2402	
	α Arietis	W.	47 5 39	2278	48 52 10	2268	50 38 56	2259	52 25 56	2250	
	Aldebaran	W.	17 38 11	3052	19 7 19	2910	20 39 25	2800	22 13 53	2711	
	Jupiter	E.	31 22 39	2228	29 34 53	2220	27 46 55	2212	25 58 46	2205	
	Saturn	E.	63 14 41	2253	61 27 32	2245	59 40 11	2236	57 52 37	2229	
	Regulus	E.	65 6 55	2253	63 19 46	2244	61 32 24	2236	59 44 50	2228	
11	α Arietis	W.	61 23 56	2215	63 12 1	2209	65 0 15	2204	66 48 36	2200	
	Aldebaran	W.	30 29 37	2456	32 11 52	2426	33 54 49	2400	35 38 23	2379	
	Saturn	E.	48 52 18	2199	47 3 49	2195	45 15 14	2191	43 26 33	2188	
	Regulus	E.	50 44 25	2198	48 55 55	2194	47 7 19	2190	45 18 36	2186	
	Mars	E.	111 23 55	2414	109 40 40	2409	107 57 18	2404	106 13 49	2400	
12	α Arietis	W.	75 51 35	2188	77 40 21	2188	79 29 7	2187	81 17 54	2187	
	Aldebaran	W.	44 22 42	2308	46 8 30	2300	47 54 30	2292	49 40 42	2286	
	Saturn	E.	34 22 17	2182	32 33 22	2182	30 44 28	2184	28 55 36	2186	
	Regulus	E.	36 14 4	2179	34 25 4	2179	32 36 4	2179	30 47 4	2180	
	Spica	E.	90 16 53	2176	88 27 50	2176	86 38 46	2176	84 49 43	2176	
	Mars	E.	97 35 10	2388	95 51 18	2387	94 7 24	2387	92 23 30	2387	
13	α Arietis	W.	90 21 33	2195	92 10 8	2198	93 58 39	2201	95 47 6	2205	
	Aldebaran	W.	58 33 18	2271	60 20 0	2270	62 6 43	2272	63 53 24	2273	
	Spica	E.	75 44 45	2184	73 55 54	2188	72 7 8	2191	70 18 27	2195	
	Mars	E.	83 44 19	2396	82 0 38	2399	80 17 2	2402	78 33 30	2407	
	SUN	E.	134 49 46	2517	133 8 56	2518	131 28 8	2521	129 47 24	2523	
14	Aldebaran	W.	72 46 13	2286	74 32 33	2290	76 18 47	2295	78 4 54	2300	
	Pollux	W.	30 10 41	2270	31 57 24	2270	33 44 8	2271	35 30 50	2273	
	Jupiter	W.	27 0 17	2188	28 49 2	2193	30 37 40	2198	32 26 10	2204	
	Spica	E.	61 16 37	2218	59 28 37	2224	57 40 46	2231	55 53 5	2237	
	Mars	E.	69 57 35	2433	68 14 47	2440	66 32 9	2446	64 49 40	2454	
	SUN	E.	121 24 55	2545	119 44 44	2550	118 4 40	2556	116 24 44	2562	
15	Aldebaran	W.	86 53 26	2331	88 38 40	2338	90 23 44	2346	92 8 37	2353	
	Pollux	W.	44 23 13	2293	46 9 22	2298	47 55 24	2305	49 41 16	2311	
	Jupiter	W.	41 26 31	2235	43 14 7	2242	45 1 32	2249	46 48 46	2256	
	Spica	E.	46 57 5	2273	45 10 25	2281	43 23 57	2289	41 37 41	2297	
	Mars	E.	56 20 0	2495	54 38 39	2504	52 57 31	2514	51 16 37	2523	
	SUN	E.	108 7 18	2596	106 28 18	2604	104 49 28	2612	103 10 49	2619	
16	Pollux	W.	58 28 18	2345	60 13 12	2353	61 57 54	2360	63 42 26	2368	
	Jupiter	W.	55 42 14	2294	57 28 22	2302	59 14 18	2311	61 0 2	2319	
	Saturn	W.	23 26 30	2342	25 11 28	2348	26 56 18	2354	28 40 59	2360	
	Regulus	W.	21 26 34	2340	23 11 35	2346	24 56 27	2353	26 41 10	2360	
	Mars	E.	42 55 39	2578	41 16 14	2591	39 37 6	2604	37 58 16	2617	
	SUN	E.	95 0 17	2661	93 22 45	2669	91 45 24	2679	90 8 16	2687	
17	Pollux	W.	72 22 17	2408	74 5 41	2416	75 48 53	2424	77 31 54	2433	
	Jupiter	W.	69 45 46	2360	71 30 19	2368	73 14 40	2376	74 58 49	2384	
	Saturn	W.	37 22 1	2396	39 5 42	2403	40 49 13	2411	42 32 32	2419	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
9	Jupiter E.	38 31 25 2266	36 44 35 2256	34 57 30 2246	33 10 11 2237				
	Saturn E.	70 20 56 2292	68 34 45 2281	66 48 18 2272	65 1 37 2262				
	Regulus E.	72 13 12 2291	70 27 0 2281	68 40 33 2271	66 53 51 2262				
10	α Pegasi W.	96 46 47 2396	98 30 28 2391	100 14 15 2387	101 58 8 2384				
	α Arietis W.	54 13 9 2242	56 0 34 2234	57 48 11 2227	59 35 59 2221				
	Aldebaran W.	23 50 18 2639	25 28 20 2580	27 7 42 2532	28 48 11 2491				
	Jupiter E.	24 10 26 2200	22 21 58 2194	20 33 21 2190	18 44 38 2186				
	Saturn E.	56 4 53 2222	54 16 58 2215	52 28 53 2209	50 40 39 2204				
	Regulus E.	57 57 4 2221	56 9 8 2215	54 21 3 2208	52 32 48 2203				
11	α Arietis W.	68 37 3 2197	70 25 35 2194	72 14 11 2191	74 2 52 2190				
	Aldebaran W.	37 22 28 2361	39 6 59 2344	40 51 54 2330	42 37 9 2318				
	Saturn E.	41 37 48 2185	39 48 58 2184	38 0 6 2182	36 11 12 2182				
	Regulus E.	43 29 48 2184	41 40 56 2182	39 52 1 2180	38 3 4 2179				
	Mars E.	104 30 14 2396	102 46 34 2393	101 2 49 2391	99 19 1 2389				
12	α Arietis W.	83 6 42 2188	84 55 28 2189	86 44 12 2190	88 32 54 2192				
	Aldebaran W.	51 27 2 2281	53 13 29 2278	55 0 1 2275	56 46 38 2272				
	Saturn E.	27 6 47 2189	25 18 3 2193	23 29 25 2198	21 40 55 2205				
	Regulus E.	28 58 7 2182	27 9 12 2185	25 20 22 2188	23 31 36 2192				
	Spica E.	83 0 39 2177	81 11 37 2178	79 22 37 2180	77 33 39 2182				
	Mars E.	90 39 36 2387	88 55 43 2389	87 11 52 2391	85 28 4 2393				
13	α Arietis W.	97 35 26 2209	99 23 41 2214	101 11 48 2218	102 59 49 2223				
	Aldebaran W.	65 40 4 2274	67 26 42 2276	69 13 17 2279	70 59 48 2283				
	Spica E.	68 29 52 2199	66 41 22 2204	64 53 0 2208	63 4 45 2213				
	Mars E.	76 50 5 2411	75 6 46 2416	73 23 35 2421	71 40 30 2428				
	Sun E.	128 6 43 2527	126 26 8 2530	124 45 37 2535	123 5 13 2540				
14	Aldebaran W.	79 50 54 2306	81 36 45 2311	83 22 28 2317	85 8 2 2324				
	Pollux W.	37 17 29 2276	39 4 3 2279	40 50 33 2284	42 36 56 2288				
	Jupiter W.	34 14 32 2209	36 2 46 2215	37 50 51 2222	39 38 46 2229				
	Spica E.	54 5 32 2243	52 18 9 2251	50 30 57 2258	48 43 55 2266				
	Mars E.	63 7 22 2461	61 25 14 2470	59 43 18 2477	58 1 33 2486				
	Sun E.	114 44 57 2568	113 5 18 2575	111 25 49 2582	109 46 29 2588				
15	Aldebaran W.	93 53 19 2362	95 37 49 2369	97 22 8 2378	99 6 15 2387				
	Pollux W.	51 27 0 2317	53 12 35 2324	54 57 59 2331	56 43 14 2338				
	Jupiter W.	48 35 50 2264	50 22 43 2271	52 9 25 2279	53 55 55 2287				
	Spica E.	39 51 38 2305	38 5 46 2315	36 20 8 2324	34 34 43 2333				
	Mars E.	49 35 56 2533	47 55 29 2544	46 15 17 2555	44 35 20 2567				
	Sun E.	101 32 20 2627	99 54 2 2636	98 15 56 2644	96 38 1 2652				
16	Pollux W.	65 26 47 2375	67 10 57 2384	68 54 55 2391	70 38 42 2400				
	Jupiter W.	62 45 34 2326	64 30 55 2335	66 16 4 2343	68 1 1 2351				
	Saturn W.	30 25 31 2367	32 9 53 2373	33 54 6 2380	35 38 9 2388				
	Regulus W.	28 25 43 2367	30 10 5 2374	31 54 17 2382	33 38 17 2389				
	Mars E.	36 19 44 2632	34 41 32 2647	33 3 41 2663	31 26 11 2681				
	Sun E.	88 31 19 2696	86 54 34 2705	85 18 1 2714	83 41 40 2723				
17	Pollux W.	79 14 42 2441	80 57 19 2449	82 39 44 2457	84 21 58 2466				
	Jupiter W.	76 42 46 2392	78 26 32 2401	80 10 6 2409	81 53 28 2417				
	Saturn W.	44 15 40 2426	45 58 37 2434	47 41 23 2442	49 23 58 2450				

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.	
		° ' "		° ' "		° ' "		° ' "		
17	Regulus W.	35 22 7	2397	37 5 46	2405	38 49 13	2414	40 32 28	2421	
	Mars E.	29 49 6	2700	28 12 26	2721	26 36 14	2744	25 0 33	2771	
	SUN E.	82 5 31	2732	80 29 34	2742	78 53 50	2750	77 18 17	2759	
18	Pollux W.	86 3 59	2474	87 45 49	2482	89 27 28	2491	91 8 54	2499	
	Jupiter W.	83 36 38	2426	85 19 36	2434	87 2 22	2442	88 44 57	2450	
	Saturn W.	51 6 21	2458	52 48 33	2467	54 30 33	2475	56 12 22	2482	
	Regulus W.	49 5 52	2462	50 47 59	2471	52 29 53	2479	54 11 36	2487	
	SUN E.	69 23 35	2806	67 49 15	2815	66 15 6	2825	64 41 10	2834	
19	Pollux W.	99 33 10	2541	101 13 26	2549	102 53 31	2558	104 33 24	2567	
	Jupiter W.	97 14 58	2491	98 56 24	2499	100 37 39	2507	102 18 42	2515	
	Saturn W.	64 38 39	2522	66 19 21	2530	67 59 52	2539	69 40 11	2547	
	Regulus W.	62 37 19	2528	64 17 53	2536	65 58 16	2544	67 38 28	2553	
	SUN E.	56 54 27	2880	55 21 42	2889	53 49 9	2898	52 16 48	2908	
20	Jupiter W.	110 41 9	2555	112 21 6	2564	114 0 50	2572	115 40 24	2580	
	Saturn W.	77 59 1	2587	79 38 14	2595	81 17 16	2603	82 56 7	2611	
	Regulus W.	75 56 38	2593	77 35 42	2601	79 14 35	2609	80 53 18	2618	
	Spica W.	22 0 58	2625	23 39 19	2629	25 17 35	2634	26 55 44	2640	
	SUN E.	44 38 2	2955	43 6 53	2965	41 35 56	2974	40 5 11	2985	
21	Saturn W.	91 7 37	2652	92 45 22	2660	94 22 55	2668	96 0 18	2676	
	Regulus W.	89 4 2	2659	90 41 37	2666	92 19 2	2675	93 56 15	2684	
	Spica W.	35 4 30	2672	36 41 48	2678	38 18 57	2686	39 55 56	2693	
	SUN E.	32 34 38	3037	31 5 11	3048	29 35 57	3060	28 6 58	3072	
26	SUN W.	25 22 26	3407	26 44 35	3412	28 6 38	3416	29 28 36	3421	
	α Pegasi E.	54 53 23	3255	53 28 19	3272	52 3 35	3290	50 39 12	3310	
	α Arietis E.	96 12 17	3003	94 42 8	3010	93 12 7	3016	91 42 14	3022	
27	SUN W.	36 17 9	3444	37 38 36	3448	38 59 58	3453	40 21 15	3456	
	α Pegasi E.	43 43 19	3425	42 21 30	3453	41 0 13	3482	39 39 29	3515	
	α Arietis E.	84 14 46	3052	82 45 38	3058	81 16 37	3062	79 47 41	3067	
28	SUN W.	47 6 40	3472	48 27 35	3475	49 48 27	3477	51 9 17	3479	
	α Pegasi E.	33 6 3	3735	31 49 53	3796	30 34 47	3865	29 20 51	3943	
	α Arietis E.	72 24 23	3087	70 55 57	3089	69 27 34	3092	67 59 15	3094	
	Aldebaran E.	104 29 24	3143	103 2 6	3144	101 34 50	3146	100 7 36	3147	
29	SUN W.	57 53 7	3480	59 13 53	3480	60 34 39	3479	61 55 27	3477	
	α Aquilæ W.	43 14 11	4723	44 14 51	4636	45 16 45	4556	46 19 48	4483	
	α Arietis E.	60 38 12	3101	59 10 3	3101	57 41 54	3101	56 13 45	3100	
	Aldebaran E.	92 51 41	3149	91 24 31	3149	89 57 21	3148	88 30 9	3147	
30	SUN W.	68 40 4	3462	70 1 11	3457	71 22 23	3452	72 43 41	3446	
	α Aquilæ W.	51 49 54	4189	52 58 30	4141	54 7 52	4097	55 17 56	4055	
	α Arietis E.	48 52 42	3092	47 24 23	3089	45 56 0	3087	44 27 34	3083	
	Aldebaran E.	81 13 41	3135	79 46 14	3133	78 18 44	3129	76 51 9	3124	
31	SUN W.	79 31 55	3411	80 53 59	3403	82 16 12	3394	83 38 36	3384	
	α Aquilæ W.	61 17 54	3876	62 31 38	3846	63 45 53	3817	65 0 38	3788	
	α Arietis E.	37 4 16	3063	35 35 21	3058	34 6 20	3054	32 37 14	3050	
	Aldebaran E.	69 31 52	3099	68 3 41	3093	66 35 23	3087	65 6 57	3080	

MEAN TIME.
LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^b .	P.L. of diff.	XVIII ^b .	P.L. of diff.	XXI ^b .	P.L. of diff.
17	Regulus W.	42 15 32 2429		43 58 25 2438		45 41 6 2446		47 23 35 2455	
	Mars E.	23 25 27 2801		21 51 1 2837		20 17 21 2880		18 44 36 2931	
	Sun E.	75 42 56 2769		74 7 48 2778		72 32 52 2787		70 58 7 2797	
18	Pollux W.	92 50 9 2507		94 31 12 2516		96 12 3 2525		97 52 42 2533	
	Jupiter W.	90 27 20 2458		92 9 32 2467		93 51 32 2475		95 33 21 2483	
	Saturn W.	57 54 0 2490		59 35 27 2499		61 16 42 2507		62 57 46 2514	
	Regulus W.	55 53 8 2495		57 34 28 2503		59 15 37 2512		60 56 34 2520	
	Sun E.	63 7 26 2842		61 33 53 2852		60 0 33 2861		58 27 24 2870	
19	Pollux W.	106 13 5 2575		107 52 34 2583		109 31 52 2592		111 10 58 2600	
	Jupiter W.	103 59 34 2523		105 40 15 2532		107 20 44 2540		109 1 2 2548	
	Saturn W.	71 20 19 2555		73 0 16 2563		74 40 2 2571		76 19 37 2579	
	Regulus W.	69 18 28 2561		70 58 17 2569		72 37 55 2577		74 17 22 2585	
	Sun E.	50 44 39 2917		49 12 41 2927		47 40 56 2936		46 9 23 2946	
20	Jupiter W.	117 19 47 2588		118 58 59 2596		120 37 59 2604		122 16 49 2612	
	Saturn W.	84 34 47 2619		86 13 16 2627		87 51 34 2635		89 29 41 2643	
	Regulus W.	82 31 49 2626		84 10 9 2635		85 48 17 2642		87 26 15 2650	
	Spica W.	28 33 45 2645		30 11 39 2651		31 49 25 2657		33 27 2 2664	
	Sun E.	38 34 39 2994		37 4 19 3005		35 34 12 3015		34 4 18 3026	
21	Saturn W.	97 37 30 2684		99 14 31 2692		100 51 21 2701		102 27 59 2710	
	Regulus W.	95 33 17 2692		97 10 8 2700		98 46 48 2708		100 23 17 2717	
	Spica W.	41 32 45 2701		43 9 24 2708		44 45 53 2716		46 22 11 2724	
	Sun E.	26 38 14 3085		25 9 46 3098		23 41 34 3112		22 13 39 3128	
26	Sun W.	30 50 29 3425		32 12 17 3430		33 34 0 3435		34 55 37 3439	
	α Pegasi E.	49 15 12 3330		47 51 35 3351		46 28 23 3374		45 5 37 3399	
	α Arietis E.	90 12 29 3029		88 42 52 3035		87 13 23 3041		85 44 1 3047	
27	Sun W.	41 42 28 3460		43 3 37 3464		44 24 41 3467		45 45 42 3470	
	α Pegasi E.	38 19 21 3551		36 59 53 3590		35 41 8 3633		34 23 9 3682	
	α Arietis E.	78 18 51 3072		76 50 7 3075		75 21 27 3080		73 52 53 3083	
28	Sun W.	52 30 5 3480		53 50 51 3480		55 11 37 3481		56 32 22 3481	
	α Pegasi E.	28 8 15 4033		26 57 8 4137		25 47 42 4259		24 40 11 4400	
	α Arietis E.	66 30 58 3096		65 2 44 3098		63 34 32 3099		62 6 21 3100	
	Aldebaran E.	98 40 23 3148		97 13 12 3148		95 46 1 3149		94 18 51 3149	
29	Sun W.	63 16 17 3475		64 37 9 3472		65 58 4 3470		67 19 2 3466	
	α Aquilæ W.	47 23 55 4415		48 29 3 4353		49 35 7 4294		50 42 5 4239	
	α Arietis E.	54 45 36 3099		53 17 25 3098		51 49 13 3096		50 20 59 3094	
	Aldebaran E.	87 2 56 3145		85 35 41 3143		84 8 24 3141		82 41 4 3138	
30	Sun W.	74 5 5 3440		75 26 36 3434		76 48 14 3427		78 10 0 3419	
	α Aquilæ W.	56 28 41 4015		57 40 6 3978		58 52 7 3943		60 4 43 3909	
	α Arietis E.	42 59 4 3079		41 30 29 3076		40 1 50 3071		38 33 5 3068	
	Aldebaran E.	75 23 29 3120		73 55 44 3115		72 27 53 3110		70 59 55 3105	
31	Sun W.	85 1 11 3374		86 23 57 3363		87 46 56 3352		89 10 7 3340	
	α Aquilæ W.	66 15 53 3761		67 31 36 3734		68 47 47 3708		70 4 25 3683	
	α Arietis E.	31 8 3 3045		29 38 46 3042		28 9 25 3038		26 39 59 3035	
	Aldebaran E.	63 38 23 3073		62 9 41 3066		60 40 50 3059		59 11 50 3051	
	Jupiter E.	106 39 7 2942		105 7 41 2931		103 36 21 2920		102 4 9 2909	

CONFIGURATIONS OF THE SATELLITES OF JUPITER,

At 18^h 30^m, MEAN TIME.

Day of the Month.	West.			East.		
1	3 ●	2.	○	1.		4
2		2. 1	○		3	4
3			○	1. 2	3.	4
4	1 ●		○	2.	3.	4.
5		2 3.	1. ○			4.
6	2 ●	3.	○	1.	4.	
7		3.	1. 4. ○		2.	
8		4.	2. ○	1.		3 ●
9		4.	2. 1	○	3	
10		4.		○	1. 2	3.
11		4		1 ○	2.	3.
12		4		2.	3.	○ 1.
13		4 3.		○ 1		2 ●
14		3 4	1. ○		2.	
15			3. 4. ○	1.		
16		2. 1	○		3	
17			○	2. 4	3.	4
18			1. ○	2.	3.	4
19			2. 3. ○			4.
20	1 ●	3.	2. ○			4.
21		3	1. ○		2.	4.
22	2. ○		3	○	1.	4.
23		2. 1	○	4.	3	
24			4. ○	1.		3.
25		4.		1. ○	2.	3.
26		4.		2. ○	1.	3. ○
27		4.	3.	2. ○		1. ●
28		4	3	1. ○		2
29		4		3. ○	1.	2. ○
30		4	2 1.	○	3	
31			4. ○	2 1.		3

This Table represents, at 18^h 30^m after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars. At Mean Midnight,				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h .449625.	From Mean Noon of January 1.	
	Logarithm of						Day of the Year.	Fraction of the Year.*
	A	B	C	D		Days.		
1	+0.8209	+1.2817	+0.0575	-0.7811	^h 7 ^m 19 ^s 32.24	253	334	.9145
2	0.8000	1.2845	0.0589	0.7797	7 15 36.33	254	335	.9172
3	0.7778	1.2872	0.0602	0.7784	7 11 40.42	255	336	.9199
4	+0.7543	+1.2897	+0.0616	-0.7772	7 7 44.51	256	337	.9227
5	0.7293	1.2921	0.0630	0.7759	7 3 48.59	257	338	.9254
6	0.7027	1.2943	0.0644	0.7748	6 59 52.68	258	339	.9282
7	+0.6741	+1.2964	+0.0658	-0.7736	6 55 56.77	259	340	.9309
8	0.6434	1.2983	0.0672	0.7725	6 52 0.86	260	341	.9336
9	0.6101	1.3001	0.0686	0.7714	6 48 4.94	261	342	.9364
10	+0.5740	+1.3017	+0.0700	-0.7704	6 44 9.03	262	343	.9391
11	0.5344	1.3032	0.0714	0.7694	6 40 13.12	263	344	.9418
12	0.4907	1.3046	0.0728	0.7685	6 36 17.20	264	345	.9446
13	+0.4419	+1.3058	+0.0742	-0.7676	6 32 21.29	265	346	.9473
14	0.3868	1.3069	0.0756	0.7667	6 28 25.38	266	347	.9501
15	0.3234	1.3078	0.0770	0.7659	6 24 29.47	267	348	.9528
16	+0.2490	+1.3086	+0.0784	-0.7652	6 20 33.55	268	349	.9555
17	0.1590	1.3093	0.0797	0.7645	6 16 37.64	269	350	.9583
18	0.0452	1.3098	0.0811	0.7639	6 12 41.73	270	351	.9610
19	+9.8002	+1.3102	+0.0825	-0.7633	6 8 45.81	271	352	.9637
20	9.6466	1.3105	0.0839	0.7627	6 4 49.90	272	353	.9665
21	+9.0404	1.3106	0.0853	0.7622	6 0 53.99	273	354	.9692
22	-9.3500	+1.3106	+0.0866	-0.7618	5 56 58.08	274	355	.9720
23	9.7462	1.3104	0.0880	0.7614	5 53 2.16	275	356	.9747
24	9.9499	1.3101	0.0894	0.7610	5 49 6.25	276	357	.9774
25	-0.0878	+1.3097	+0.0907	-0.7608	5 45 10.34	277	358	.9802
26	0.1923	1.3091	0.0921	0.7605	5 41 14.42	278	359	.9829
27	0.2763	1.3084	0.0934	0.7603	5 37 18.51	279	360	.9856
28	-0.3466	+1.3075	+0.0948	-0.7602	5 33 22.60	280	361	.9884
29	0.4069	1.3065	0.0961	0.7601	5 29 26.69	281	362	.9911
30	0.4597	1.3054	0.0974	0.7601	5 25 30.77	282	363	.9939
31	0.5067	1.3041	0.0988	0.7601	5 21 34.86	283	364	.9966
32	-0.5490	+1.3027	+0.1001	-0.7602	5 17 38.95	284	365	.9993

* Add .0017 if Fraction be required for the time t, see page 363.

* Add .0017 if Fraction be required for the time *t*, see page 363.

242 OBLIQUITY OF THE ECLIPTIC, &c.

Mean Noon.	Apparent Obliquity.	The Sun's		Precession in Longitude.	Equation of Equinoxes.		Mean Longitude of \odot 's ascending Node.
		Horizontal Parallax.	Aberration.		In Long.	In R. A. (in time)	
1859.	$23^{\circ} 27'$						
Jan. 1	$35^{\circ} 43'$	$8^{\circ} 72'$	$-20^{\circ} 79'$	$0^{\circ} 00'$	$+ 8^{\circ} 36'$	$+ 0^{\circ} 51'$	$332^{\circ} 6' 1''$
11	$35^{\circ} 48'$	$8^{\circ} 72'$	$20^{\circ} 79'$	$1^{\circ} 38'$	$8^{\circ} 84'$	$0^{\circ} 54'$	$331^{\circ} 34' 4''$
21	$35^{\circ} 58'$	$8^{\circ} 71'$	$20^{\circ} 77'$	$2^{\circ} 75'$	$9^{\circ} 29'$	$0^{\circ} 57'$	$331^{\circ} 2' 6''$
31	$35^{\circ} 71'$	$8^{\circ} 70'$	$20^{\circ} 75'$	$4^{\circ} 13'$	$9^{\circ} 57'$	$0^{\circ} 59'$	$330^{\circ} 30' 8''$
Feb. 10	$35^{\circ} 85'$	$8^{\circ} 69'$	$20^{\circ} 71'$	$5^{\circ} 50'$	$9^{\circ} 68'$	$0^{\circ} 59'$	$329^{\circ} 59' 1''$
20	$35^{\circ} 97'$	$8^{\circ} 67'$	$20^{\circ} 67'$	$6^{\circ} 88'$	$9^{\circ} 66'$	$0^{\circ} 59'$	$329^{\circ} 27' 3''$
Mar. 2	$36^{\circ} 06'$	$8^{\circ} 65'$	$20^{\circ} 62'$	$8^{\circ} 26'$	$9^{\circ} 49'$	$0^{\circ} 58'$	$328^{\circ} 55' 5''$
12	$36^{\circ} 09'$	$8^{\circ} 63'$	$20^{\circ} 56'$	$9^{\circ} 63'$	$9^{\circ} 24'$	$0^{\circ} 56'$	$328^{\circ} 23' 7''$
22	$36^{\circ} 05'$	$8^{\circ} 60'$	$20^{\circ} 50'$	$11^{\circ} 01'$	$8^{\circ} 94'$	$0^{\circ} 55'$	$327^{\circ} 52' 0''$
Apr. 1	$35^{\circ} 96'$	$8^{\circ} 58'$	$20^{\circ} 45'$	$12^{\circ} 38'$	$8^{\circ} 65'$	$0^{\circ} 53'$	$327^{\circ} 20' 2''$
11	$35^{\circ} 80'$	$8^{\circ} 55'$	$20^{\circ} 39'$	$13^{\circ} 76'$	$8^{\circ} 42'$	$0^{\circ} 52'$	$326^{\circ} 48' 4''$
21	$35^{\circ} 60'$	$8^{\circ} 53'$	$20^{\circ} 33'$	$15^{\circ} 13'$	$8^{\circ} 28'$	$0^{\circ} 51'$	$326^{\circ} 16' 6''$
May 1	$35^{\circ} 36'$	$8^{\circ} 51'$	$20^{\circ} 28'$	$16^{\circ} 51'$	$8^{\circ} 26'$	$0^{\circ} 51'$	$325^{\circ} 44' 9''$
11	$35^{\circ} 12'$	$8^{\circ} 49'$	$20^{\circ} 23'$	$17^{\circ} 89'$	$8^{\circ} 41'$	$0^{\circ} 52'$	$325^{\circ} 13' 1''$
21	$34^{\circ} 89'$	$8^{\circ} 47'$	$20^{\circ} 19'$	$19^{\circ} 26'$	$8^{\circ} 68'$	$0^{\circ} 53'$	$324^{\circ} 41' 3''$
31	$34^{\circ} 68'$	$8^{\circ} 46'$	$20^{\circ} 16'$	$20^{\circ} 64'$	$9^{\circ} 07'$	$0^{\circ} 56'$	$324^{\circ} 9' 6''$
June 10	$34^{\circ} 53'$	$8^{\circ} 45'$	$20^{\circ} 13'$	$22^{\circ} 01'$	$9^{\circ} 56'$	$0^{\circ} 59'$	$323^{\circ} 37' 8''$
20	$34^{\circ} 43'$	$8^{\circ} 44'$	$20^{\circ} 12'$	$23^{\circ} 39'$	$10^{\circ} 09'$	$0^{\circ} 62'$	$323^{\circ} 6' 0''$
30	$34^{\circ} 39'$	$8^{\circ} 44'$	$20^{\circ} 11'$	$24^{\circ} 77'$	$10^{\circ} 64'$	$0^{\circ} 65'$	$322^{\circ} 34' 2''$
July 10	$34^{\circ} 41'$	$8^{\circ} 44'$	$20^{\circ} 11'$	$26^{\circ} 14'$	$11^{\circ} 14'$	$0^{\circ} 68'$	$322^{\circ} 2' 5''$
20	$34^{\circ} 46'$	$8^{\circ} 44'$	$20^{\circ} 12'$	$27^{\circ} 52'$	$11^{\circ} 57'$	$0^{\circ} 71'$	$321^{\circ} 30' 7''$
30	$34^{\circ} 57'$	$8^{\circ} 45'$	$20^{\circ} 14'$	$28^{\circ} 89'$	$11^{\circ} 88'$	$0^{\circ} 73'$	$320^{\circ} 58' 9''$
Aug. 9	$34^{\circ} 68'$	$8^{\circ} 46'$	$20^{\circ} 17'$	$30^{\circ} 27'$	$12^{\circ} 05'$	$0^{\circ} 74'$	$320^{\circ} 27' 1''$
19	$34^{\circ} 80'$	$8^{\circ} 48'$	$20^{\circ} 21'$	$31^{\circ} 65'$	$12^{\circ} 08'$	$0^{\circ} 74'$	$319^{\circ} 55' 4''$
29	$34^{\circ} 89'$	$8^{\circ} 50'$	$20^{\circ} 25'$	$33^{\circ} 02'$	$11^{\circ} 98'$	$0^{\circ} 73'$	$319^{\circ} 23' 6''$
Sept. 8	$34^{\circ} 94'$	$8^{\circ} 52'$	$20^{\circ} 30'$	$34^{\circ} 40'$	$11^{\circ} 79'$	$0^{\circ} 72'$	$318^{\circ} 51' 8''$
18	$34^{\circ} 93'$	$8^{\circ} 55'$	$20^{\circ} 36'$	$35^{\circ} 77'$	$11^{\circ} 49'$	$0^{\circ} 70'$	$318^{\circ} 20' 0''$
28	$34^{\circ} 87'$	$8^{\circ} 57'$	$20^{\circ} 42'$	$37^{\circ} 15'$	$11^{\circ} 17'$	$0^{\circ} 69'$	$317^{\circ} 48' 3''$
Oct. 8	$34^{\circ} 73'$	$8^{\circ} 59'$	$20^{\circ} 48'$	$38^{\circ} 53'$	$10^{\circ} 88'$	$0^{\circ} 67'$	$317^{\circ} 16' 5''$
18	$34^{\circ} 55'$	$8^{\circ} 62'$	$20^{\circ} 54'$	$39^{\circ} 90'$	$10^{\circ} 66'$	$0^{\circ} 65'$	$316^{\circ} 44' 7''$
28	$34^{\circ} 31'$	$8^{\circ} 64'$	$20^{\circ} 59'$	$41^{\circ} 28'$	$10^{\circ} 55'$	$0^{\circ} 65'$	$316^{\circ} 13' 0''$
Nov. 7	$34^{\circ} 06'$	$8^{\circ} 66'$	$20^{\circ} 64'$	$42^{\circ} 65'$	$10^{\circ} 58'$	$0^{\circ} 65'$	$315^{\circ} 41' 2''$
17	$33^{\circ} 79'$	$8^{\circ} 68'$	$20^{\circ} 69'$	$44^{\circ} 03'$	$10^{\circ} 77'$	$0^{\circ} 66'$	$315^{\circ} 9' 4''$
27	$33^{\circ} 56'$	$8^{\circ} 70'$	$20^{\circ} 73'$	$45^{\circ} 40'$	$11^{\circ} 09'$	$0^{\circ} 68'$	$314^{\circ} 37' 6''$
Dec. 7	$33^{\circ} 36'$	$8^{\circ} 71'$	$20^{\circ} 76'$	$46^{\circ} 78'$	$11^{\circ} 55'$	$0^{\circ} 71'$	$314^{\circ} 5' 9''$
17	$33^{\circ} 22'$	$8^{\circ} 72'$	$20^{\circ} 78'$	$48^{\circ} 16'$	$12^{\circ} 08'$	$0^{\circ} 74'$	$313^{\circ} 34' 1''$
27	$33^{\circ} 15'$	$8^{\circ} 72'$	$20^{\circ} 79'$	$49^{\circ} 53'$	$12^{\circ} 64'$	$0^{\circ} 77'$	$313^{\circ} 2' 3''$
37	$33^{\circ} 14'$	$8^{\circ} 72'$	$-20^{\circ} 79'$	$50^{\circ} 91'$	$+ 13^{\circ} 16'$	$+ 0^{\circ} 81'$	$312^{\circ} 30' 6''$
Mean Obliquity, Jan. 1, 1859 - - - - $23^{\circ} 27' 27^{\circ} 84'$ Precession of the Equinoxes for the Year 1859 $50^{\circ} 2545'$ for 1 Day							Daily Motion $- 3' 18''$

Month and Day at Mean Noon.		X, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.
Jan.	1	+0°1811220	-391	-0°8865572	-206	-0°3847475	+299
	2	°1982940	399	°8834646	214	°3834053	293
	3	°2154045	406	°8800960	222	°3819435	288
	4	°2324478	413	°8764524	231	°3803622	283
	5	°2494183	420	°8725344	239	°3786619	278
	6	°2663107	427	°8683436	248	°3768432	273
	7	°2831188	433	°8638816	256	°3749068	267
	8	°2998373	438	°8591494	264	°3728532	262
	9	°3164612	443	°8541494	273	°3706833	256
	10	°3329852	448	°8488834	282	°3683981	251
	11	°3494041	453	°8433538	291	°3659983	245
	12	°3657128	458	°8375622	300	°3634848	239
	13	°3819066	463	°8315104	309	°3608586	232
	14	°3979800	468	°8252018	318	°3581207	225
	15	°4139289	472	°8186374	328	°3552721	218
	16	°4297487	476	°8118204	338	°3523135	211
	17	°4454348	479	°8047520	349	°3492462	204
	18	°4609826	482	°7974349	360	°3460707	197
	19	°4763878	485	°7898715	371	°3427884	189
	20	°4916462	487	°7820647	383	°3394005	181
	21	°5067529	489	°7740157	395	°3359074	173
	22	°5217038	491	°7657274	406	°3323105	165
	23	°5364945	493	°7572017	417	°3286105	157
	24	°5511199	494	°7484414	428	°3248088	149
	25	°5655761	495	°7394487	439	°3209061	141
	26	°5798589	496	°7302258	450	°3169038	133
	27	°5939633	496	°7207758	461	°3128028	125
	28	°6078844	495	°7111018	472	°3086044	117
	29	°6216183	494	°7012065	483	°3043101	108
	30	°6351600	493	°6910923	494	°2999209	99
	31	°6485053	491	°6807635	504	°2954383	90
Feb.	1	°6616495	489	°6702220	515	°2908635	81
	2	°6745886	487	°6594725	526	°2861984	72
	3	°6873185	484	°6485179	537	°2814445	62
	4	°6998348	481	°6373623	548	°2766033	52
	5	°7121340	477	°6260097	559	°2716764	42
	6	°7242118	473	°6144637	570	°2666657	33
	7	°7360643	468	°6027283	581	°2615729	23
	8	°7476885	463	°5908075	592	°2563995	14
	9	°7590817	458	°5787058	603	°2511476	+ 4
	10	°7702397	453	°5664267	613	°2458187	- 6
	11	°7811599	447	°5539745	624	°2404148	15
	12	°7918392	441	°5413535	634	°2349374	25
	13	°8022750	435	°5285679	644	°2293888	35
	14	°8124650	429	°5156214	654	°2237703	45
	15	°8224060	422	°5025179	664	°2180837	55
	16	+0°8320952	-415	-0°4892616	-674	-0°2123306	- 65

Month and Day at Mean Noon.	X, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.
Feb. 16	+0.8320952	-415	-0.4892616	-674	-0.2123306	-65
17	.8415306	407	.4758562	684	.2065130	75
18	.8507094	399	.4623060	694	.2006325	85
19	.8596298	390	.4486147	703	.1946909	95
20	.8682888	380	.4347865	712	.1886896	105
21	.8766838	370	.4208251	721	.1826307	115
22	.8848124	360	.4067348	730	.1765158	125
23	.8926724	350	.3925195	738	.1703466	135
24	.9002606	339	.3781834	746	.1641250	145
25	.9075760	328	.3637304	754	.1578527	155
26	.9146152	317	.3491651	762	.1515316	165
27	.9213760	306	.3344922	770	.1451638	175
28	.9278566	295	.3197162	778	.1387514	185
March 1	.9340544	284	.3048416	785	.1322961	195
2	.9399679	273	.2898735	792	.1258002	205
3	.9455944	261	.2748161	799	.1192655	215
4	.9509329	248	.2596748	806	.1126944	225
5	.9559812	235	.2444545	812	.1060890	235
6	.9607390	222	.2291602	818	.0994516	245
7	.9652049	209	.2137967	824	.0927841	255
8	.9693770	196	.1983692	830	.0860889	265
9	.9732550	182	.1828830	835	.0793681	275
10	.9768385	168	.1673428	840	.0726239	285
11	.9801265	154	.1517533	845	.0658584	295
12	.9831189	139	.1361194	849	.0590735	304
13	.9858154	124	.1204459	853	.0522715	313
14	.9882154	108	.1047376	856	.0454543	322
15	.9903195	92	.0889995	859	.0386243	331
16	.9921272	76	.0732358	862	.0317831	340
17	.9936387	60	.0574509	865	.0249327	348
18	.9948532	44	.0416492	868	.0180750	357
19	.9957717	28	.0258354	871	.0112121	366
20	.9963927	-12	-0.0100138	874	-0.0043458	375
21	.9967185	+4	+0.0058113	877	+0.0025220	384
22	.9967475	21	.0216354	880	.0093894	393
23	.9964800	38	.0374540	882	.0162544	401
24	.9959162	56	.0532626	884	.0231151	409
25	.9950557	74	.0690567	885	.0299694	417
26	.9938995	92	.0848316	886	.0368154	425
27	.9924475	110	.1005833	887	.0436514	433
28	.9906995	128	.1163064	887	.0504749	441
29	.9886564	146	.1319962	887	.0572840	448
30	.9863192	164	.1476478	888	.0640765	455
31	.9836882	182	.1632563	887	.0708503	462
April 1	.9807642	200	.1788169	887	.0776034	469
2	.9775480	218	.1943248	886	.0843335	476
3	+0.9740410	+236	+0.2097748	-885	+0.0910385	-483

Month and Day at Mean Noon.	X, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.
April 3	+0° 9740410	+ 236	+0° 2097748	-885	+0° 0910385	-483
4	° 9702450	254	° 2251625	884	° 0977165	489
5	° 9661615	273	° 2404827	882	° 1043651	495
6	° 9617915	292	° 2557311	880	° 1109827	501
7	° 9571374	311	° 2709031	878	° 1175669	507
8	° 9522009	330	° 2859935	876	° 1241159	513
9	° 9469842	349	° 3009983	874	° 1306277	519
10	° 9414892	368	° 3159133	872	° 1371004	524
11	° 9357180	388	° 3307341	869	° 1435324	529
12	° 9296736	407	° 3454567	866	° 1499218	534
13	° 9233572	426	° 3600773	862	° 1562667	539
14	° 9167729	446	° 3745910	858	° 1625654	543
15	° 9099214	466	° 3889951	853	° 1688164	547
16	° 9028054	486	° 4032851	848	° 1750180	551
17	° 8954270	507	° 4174577	843	° 1811686	555
18	° 8877886	527	° 4315090	838	° 1872666	559
19	° 8798920	548	° 4454352	833	° 1933102	562
20	° 8717400	568	° 4592331	828	° 1992982	565
21	° 8633350	588	° 4728988	823	° 2052287	568
22	° 8546790	609	° 4864281	817	° 2111002	571
23	° 8457744	629	° 4998174	811	° 2169107	574
24	° 8366232	649	° 5130627	805	° 2226590	577
25	° 8272290	669	° 5261605	799	° 2283431	579
26	° 8175930	689	° 5391067	792	° 2339614	581
27	° 8077194	709	° 5518978	785	° 2395123	582
28	° 7976100	729	° 5645295	777	° 2449941	583
29	° 7872682	749	° 5769975	769	° 2504049	584
30	° 7766974	769	° 5892991	761	° 2557435	585
May 1	° 7659005	789	° 6014301	752	° 2610079	586
2	° 7548807	809	° 6133864	742	° 2661967	586
3	° 7436417	829	° 6251649	732	° 2713082	586
4	° 7321874	849	° 6367619	722	° 2763409	585
5	° 7205216	869	° 6481742	712	° 2812934	585
6	° 7086482	890	° 6593983	702	° 2861644	585
7	° 6965708	911	° 6704312	692	° 2909523	584
8	° 6842940	932	° 6812692	682	° 2956557	583
9	° 6718215	952	° 6919106	672	° 3002738	582
10	° 6591569	972	° 7023522	661	° 3048049	581
11	° 6463044	992	° 7125912	650	° 3092484	579
12	° 6332685	1012	° 7226253	638	° 3136029	577
13	° 6200523	1032	° 7324525	625	° 3178676	575
14	° 6066604	1052	° 7420702	612	° 3220414	572
15	° 5930964	1071	° 7514760	598	° 3261231	569
16	° 5793642	1090	° 7606674	584	° 3301119	566
17	° 5654671	1109	° 7696429	570	° 3340068	563
18	° 5514095	1128	° 7783994	556	° 3378069	560
19	+0° 5371949	+1147	+0° 7869349	-542	+0° 3415110	-557

Month and Day at Mean Noon.	X, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.
May 19	+0° 5371949	+1147	+0° 7869349	-542	+0° 3415110	-557
20	° 5228270	1166	° 7952477	528	° 3451186	553
21	° 5083097	1185	° 8033349	514	° 3486283	549
22	° 4936470	1204	° 8111946	499	° 3520389	545
23	° 4788426	1223	° 8188245	484	° 3553501	540
24	° 4639008	1241	° 8262220	468	° 3585603	535
25	° 4488253	1259	° 8333850	452	° 3616688	530
26	° 4336205	1277	° 8403120	435	° 3646748	525
27	° 4182906	1295	° 8469994	417	° 3675769	519
28	° 4028403	1313	° 8534464	399	° 3703747	513
29	° 3872742	1331	° 8596504	381	° 3730669	507
30	° 3715971	1349	° 8656096	363	° 3756529	501
31	° 3558133	1367	° 8713216	344	° 3781318	494
June 1	° 3399280	1384	° 8767854	325	° 3805028	487
2	° 3239460	1401	° 8819986	306	° 3827653	480
3	° 3078722	1418	° 8869610	287	° 3849187	473
4	° 2917117	1435	° 8916706	268	° 3869624	465
5	° 2754692	1451	° 8961262	248	° 3888960	457
6	° 2591497	1467	° 9003272	227	° 3907191	449
7	° 2427586	1482	° 9042726	206	° 3924311	441
8	° 2263003	1497	° 9079614	185	° 3940318	432
9	° 2097794	1512	° 9113932	164	° 3955211	423
10	° 1932008	1526	° 9145674	142	° 3968985	414
11	° 1765692	1540	° 9174838	120	° 3981641	405
12	° 1598889	1554	° 9201414	98	° 3993174	396
13	° 1431652	1567	° 9225406	76	° 4003586	387
14	° 1264019	1580	° 9246806	53	° 4012872	377
15	° 1096034	1593	° 9265609	30	° 4021031	367
16	° 0927742	1605	° 9281812	- 6	° 4028061	357
17	° 0759187	1617	° 9295410	+ 18	° 4033963	346
18	° 0590413	1628	° 9306399	42	° 4038730	335
19	° 0421460	1639	° 9314780	66	° 4042368	324
20	° 0252378	1649	° 9320546	90	° 4044868	313
21	+0° 0083210	1659	° 9323692	115	° 4046235	302
22	-0° 0085993	1668	° 9324214	140	° 4046461	291
23	° 0255188	1677	° 9322110	166	° 4045548	280
24	° 0424326	1686	° 9317380	192	° 4043495	269
25	° 0593364	1694	° 9310022	218	° 4040301	257
26	° 0762248	1702	° 9300030	245	° 4035964	245
27	° 0930926	1709	° 9287409	272	° 4030487	233
28	° 1099350	1715	° 9272162	299	° 4023869	221
29	° 1267470	1720	° 9254286	326	° 4016113	208
30	° 1435234	1725	° 9233796	353	° 4007221	195
July 1	° 1602593	1730	° 9210686	380	° 3997192	182
2	° 1769494	1734	° 9184970	407	° 3986032	169
3	° 1935889	1738	° 9156658	434	° 3973745	156
4	-0° 2101726	+1742	+0° 9125756	+462	+0° 3960335	-143

Month and Day at Mean Noon.	X, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.
July 4	-0°2101726	+1742	+0°9125756	+462	+0°3960335	-143
5	2266957	1746	9092280	490	3945806	130
6	2431537	1749	9056238	518	3930165	117
7	2595408	1751	9017644	547	3913418	103
8	2758534	1752	8976520	576	3895570	89
9	2920868	1752	8932868	605	3876626	75
10	3082366	1751	8886710	634	3856595	61
11	3242986	1749	8838058	664	3835482	47
12	3402685	1747	8786930	693	3813294	33
13	3561423	1745	8733348	722	3790041	19
14	3719155	1743	8677316	751	3765725	-5
15	3875845	1740	8618852	780	3740354	+9
16	4031448	1737	8557976	809	3713935	24
17	4185925	1733	8494694	838	3686472	39
18	4339236	1728	8439028	866	3657975	54
19	4491336	1722	8360994	894	3628450	69
20	4642189	1715	8290606	922	3597904	84
21	4791746	1707	8217874	950	3566341	99
22	4939968	1698	8142822	978	3533771	114
23	5086807	1689	8065467	1006	3500200	129
24	5232221	1680	7985822	1034	3465637	144
25	5376171	1670	7903905	1062	3430087	159
26	5518668	1659	7819740	1091	3393563	174
27	5659484	1648	7733350	1119	3356073	189
28	5798764	1636	7644767	1147	3317631	204
29	5936397	1624	7554004	1175	3278242	219
30	6072344	1611	7461092	1203	3237921	234
31	6206557	1597	7366052	1231	3196677	249
Aug. 1	6339002	1582	7268923	1259	3154526	264
2	6469638	1566	7169727	1287	3111477	280
3	6598423	1549	7068498	1315	3067547	296
4	6725322	1531	6965268	1343	3022749	312
5	6850300	1513	6860068	1370	2977096	327
6	6973319	1494	6752930	1397	2930601	342
7	7094345	1475	6643888	1423	2883279	357
8	7213350	1456	6532972	1448	2835145	372
9	7330298	1436	6420210	1473	2786210	386
10	7445163	1415	6305640	1498	2736490	401
11	7557910	1393	6189290	1522	2685998	416
12	7668515	1371	6071197	1546	2634749	431
13	7776949	1348	5951390	1570	2582755	446
14	7883174	1325	5829890	1594	2530028	461
15	7987170	1301	5706741	1617	2476585	475
16	8088897	1277	5581965	1639	2422436	489
17	8188340	1252	5455601	1661	2367596	503
18	8285460	1227	5327675	1683	2312081	517
19	-0°8380228	+1201	+0°5198220	+1704	+0°2255901	+531

Month and Day at Mean Noon.	X, True Eq ² of Date.	Reduc. to M. Eq ² of Jan. 1.	Y, True Eq ² of Date.	Reduc. to M. Eq ² of Jan. 1.	Z, True Eq ² of Date.	Reduc. to M. Eq ² of Jan. 1.
Aug. 19	-0.8380228	+1201	+0.5198220	+1704	+0.2255901	+531
20	.8472610	1174	.5067271	1725	.2199071	545
21	.8562578	1146	.4934860	1745	.2141609	559
22	.8650110	1118	.4801028	1765	.2083529	573
23	.8735162	1090	.4665806	1785	.2024847	587
24	.8817716	1061	.4529227	1805	.1965575	601
25	.8897739	1032	.4391337	1824	.1905734	615
26	.8975200	1002	.4252171	1842	.1845340	628
27	.9050072	972	.4111777	1860	.1784412	641
28	.9122334	942	.3970193	1878	.1722968	654
29	.9191964	911	.3827460	1895	.1661026	667
30	.9258929	879	.3683623	1912	.1598603	680
31	.9323206	847	.3538725	1928	.1535722	693
Sept. 1	.9384790	814	.3392812	1944	.1472400	706
2	.9443649	781	.3245927	1959	.1408655	718
3	.9499770	748	.3098114	1973	.1344508	730
4	.9553142	714	.2949418	1986	.1279977	742
5	.9603744	679	.2799888	1999	.1215085	754
6	.9651564	644	.2649562	2011	.1149847	765
7	.9696594	608	.2498482	2023	.1084282	776
8	.9738822	572	.2346693	2034	.1018409	787
9	.9778229	536	.2194236	2045	.0952247	798
10	.9814812	500	.2041153	2055	.0885812	809
11	.9848565	463	.1887488	2065	.0819126	819
12	.9879470	426	.1733281	2074	.0752204	829
13	.9907519	389	.1578571	2083	.0685063	839
14	.9932700	352	.1423402	2091	.0617723	849
15	.9954997	314	.1267813	2098	.0550201	859
16	.9974412	276	.1111846	2104	.0482515	868
17	0.9990929	238	.0955545	2110	.0414684	877
18	1.0004537	200	.0798949	2115	.0346725	886
19	1.0015225	161	.0642108	2119	.0278660	894
20	1.0022986	122	.0485065	2123	.0210507	902
21	1.0027816	82	.0327866	2126	.0142286	910
22	1.0029700	42	.0170558	2129	.0074018	917
23	1.0028630	+ 2	+0.0013182	2131	+0.0005721	924
24	1.0024609	- 37	-0.0144206	2132	-0.0062582	931
25	1.0017632	77	.0301559	2132	.0130870	938
26	1.0007700	117	.0458828	2133	.0199121	945
27	0.9994802	157	.0615963	2134	.0267313	951
28	.9978947	197	.0772915	2133	.0335427	957
29	.9960132	238	.0929631	2132	.0403438	962
30	.9938370	279	.1086065	2130	.0471326	967
Oct. 1	.9913662	320	.1242167	2127	.0539071	972
2	.9886020	361	.1397890	2123	.0606651	977
3	.9855450	402	.1553188	2119	.0674046	982
4	-0.9821964	- 443	-0.1708010	+2114	-0.0741234	+986

Month and Day at Mean Noon.		X, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.
Oct.	4	-0° 9821964	- 443	-0° 1708010	+2114	-0° 0741234	+ 986
	5	° 9785569	484	° 1862306	2108	° 0808195	990
	6	° 9746282	525	° 2016039	2102	° 0874911	993
	7	° 9704115	566	° 2169163	2096	° 0941363	996
	8	° 9659074	607	° 2321633	2089	° 1007531	999
	9	° 9611179	647	° 2473407	2082	° 1073397	1001
	10	° 9560442	688	° 2624444	2074	° 1138943	1003
	11	° 9506874	729	° 2774698	2065	° 1204149	1005
	12	° 9450489	769	° 2924128	2055	° 1268998	1007
	13	° 9391300	810	° 3072694	2045	° 1333471	1008
	14	° 9329317	851	° 3220350	2034	° 1397550	1008
	15	° 9264556	892	° 3367055	2022	° 1461216	1008
	16	° 9197034	933	° 3512767	2009	° 1524452	1008
	17	° 9126760	974	° 3657445	1996	° 1587237	1008
	18	° 9053748	1015	° 3801044	1982	° 1649555	1007
	19	° 8978019	1056	° 3943514	1967	° 1711382	1006
	20	° 8899592	1097	° 4084814	1952	° 1772703	1005
	21	° 8818482	1138	° 4224898	1936	° 1833495	1003
	22	° 8734706	1178	° 4363720	1920	° 1893739	1001
	23	° 8648286	1218	° 4501236	1904	° 1953417	999
	24	° 8559248	1258	° 4637399	1887	° 2012507	996
	25	° 8467618	1297	° 4772163	1869	° 2070991	993
	26	° 8373416	1336	° 4905484	1851	° 2128848	989
	27	° 8276678	1375	° 5037321	1833	° 2186062	985
	28	° 8177426	1414	° 5167624	1814	° 2242609	981
	29	° 8075690	1453	° 5296350	1794	° 2298472	976
	30	° 7971507	1492	° 5423461	1773	° 2353634	971
	31	° 7864910	1531	° 5548916	1751	° 2408078	966
Nov.	1	° 7755935	1569	° 5672678	1729	° 2461786	960
	2	° 7644610	1607	° 5794705	1707	° 2514742	954
	3	° 7530975	1645	° 5914963	1684	° 2566928	947
	4	° 7415067	1683	° 6033408	1660	° 2618330	940
	5	° 7296922	1720	° 6150016	1636	° 2668933	933
	6	° 7176570	1757	° 6264746	1612	° 2718723	926
	7	° 7054049	1794	° 6377571	1587	° 2767684	918
	8	° 6929395	1830	° 6488453	1561	° 2815803	910
	9	° 6802643	1866	° 6597368	1534	° 2863067	901
	10	° 6673831	1902	° 6704276	1506	° 2909462	891
	11	° 6542996	1938	° 6809156	1478	° 2954975	881
	12	° 6410164	1973	° 6911965	1450	° 2999589	871
	13	° 6275379	2008	° 7012675	1421	° 3043293	861
	14	° 6138673	2042	° 7111253	1392	° 3086073	851
	15	° 6000087	2076	° 7207670	1363	° 3127914	841
	16	° 5859653	2109	° 7301897	1333	° 3168804	830
	17	° 5717412	2142	° 7393897	1302	° 3208728	819
	18	° 5573406	2174	° 7483635	1270	° 3247671	807
	19	-0° 5427679	-2206	-0° 7571085	+1238	-0° 3285620	+ 795

Month and Day at Mean Noon.	X, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.	Reduc. to M. Eq ^d of Jan. 1.
Nov. 19	-0.5427679	-2206	-0.7571085	+1238	-0.3285620	+795
20	.5280269	2238	.7656212	1205	.3322561	782
21	.5131221	2270	.7738984	1172	.3358481	769
22	.4980575	2301	.7819375	1138	.3393367	756
23	.4828387	2331	.7897355	1103	.3427207	742
24	.4674701	2360	.7972895	1067	.3459988	728
25	.4519567	2389	.8045970	1031	.3491699	714
26	.4363035	2417	.8116550	995	.3522328	700
27	.4205155	2444	.8184619	959	.3551867	686
28	.4045978	2471	.8250144	922	.3580302	671
29	.3885558	2497	.8313108	884	.3607625	656
30	.3723946	2523	.8373496	846	.3633831	640
Dec. 1	.3561194	2549	.8431286	807	.3658910	624
2	.3397354	2574	.8486464	768	.3682854	608
3	.3232477	2598	.8539012	728	.3705657	591
4	.3066622	2621	.8588916	687	.3727313	574
5	.2899833	2644	.8636164	646	.3747816	557
6	.2732159	2666	.8680744	604	.3767160	540
7	.2563653	2688	.8722640	562	.3785342	522
8	.2394362	2709	.8761848	520	.3802356	504
9	.2224338	2729	.8798348	477	.3818195	486
10	.2053632	2748	.8832140	434	.3832859	468
11	.1882290	2767	.8863214	391	.3846343	449
12	.1710361	2785	.8891546	348	.3858637	430
13	.1537894	2802	.8917134	304	.3869741	411
14	.1364942	2818	.8939962	260	.3879647	392
15	.1191554	2834	.8960022	216	.3888352	373
16	.1017776	2849	.8977310	171	.3895853	354
17	.0843665	2863	.8991814	126	.3902147	334
18	.0669279	2876	.9003518	80	.3907226	314
19	.0494669	2888	.9012422	+ 33	.3911090	294
20	.0319891	2899	.9018518	- 14	.3913735	273
21	-0.0145001	2909	.9021804	62	.3915159	252
22	+0.0029947	2918	.9022268	110	.3915362	231
23	.0204891	2926	.9019918	158	.3914340	210
24	.0379773	2933	.9014742	206	.3912095	189
25	.0554538	2940	.9006748	254	.3908625	168
26	.0729126	2946	.8995942	302	.3903935	146
27	.0903480	2951	.8982320	350	.3898024	124
28	.1077539	2955	.8965888	398	.3890891	102
29	.1251249	2958	.8946656	446	.3882545	80
30	.1424557	2960	.8924636	494	.3872990	58
31	.1597406	2961	.8899834	543	.3862225	36
32	+0.1769741	-2961	-0.8872262	- 592	-0.3850260	+ 13

EPHEMERIS
OF
THE PLANETS.

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.			
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
	<div>h m s</div>	<div>° ' "</div>	<div>9</div>	<div>h m</div>	<div>° ' "</div>	<div>North</div>	<div>9</div>	
Jan.	1	18 24 38.80	20 22 11.2	.8298677	23 33.1	110 59 41.9	6 19 12.9	.5021590
	2	18 19 20.23	20 16 40.3	.8334294	23 24.4	116 54 7.2	6 35 47.9	.5071091
	3	18 14 30.75	20 12 48.7	.8386017	23 16.3	122 40 27.1	6 47 57.9	.5125888
	4	18 10 16.66	20 10 39.5	.8451609	23 8.8	128 18 2.1	6 55 52.4	.5185115
	5	18 6 42.20	20 10 13.3	.8528687	23 2.0	133 46 23.6	6 59 45.4	.5247896
	6	18 3 49.74	20 11 26.9	.8614861	22 55.8	139 5 13.9	6 59 54.1	.5313403
	7	18 1 39.98	20 14 14.9	.8707885	22 50.4	144 14 24.8	6 56 37.8	.5380864
	8	18 0 12.40	20 18 29.0	.8805734	22 45.7	149 13 56.6	6 50 16.6	.5449573
	9	17 59 25.57	20 23 59.4	.8906643	22 41.6	154 3 56.0	6 41 11.0	.5518880
	10	17 59 17.34	20 30 34.8	.9009135	22 38.1	158 44 36.8	6 29 40.9	.5588233
	11	17 59 45.25	20 38 3.9	.9111988	22 35.2	163 16 15.9	6 16 5.3	.5657138
	12	18 0 46.65	20 46 14.7	.9214236	22 32.7	167 39 14.4	6 0 41.7	.5725163
	13	18 2 18.84	20 54 55.8	.9315110	22 30.7	171 53 55.2	5 43 46.6	.5791951
	14	18 4 19.15	21 3 56.3	.9414039	22 29.2	176 0 43.0	5 25 34.5	.5857195
	15	18 6 45.09	21 13 5.9	.9510588	22 28.1	180 0 3.5	5 6 18.7	.5920644
	16	18 9 34.32	21 22 15.1	.9604456	22 27.3	183 52 22.3	4 46 10.8	.5982078
	17	18 12 44.63	21 31 15.3	.9695434	22 26.8	187 38 5.7	4 25 21.2	.6041349
	18	18 16 14.07	21 39 58.3	.9783390	22 26.6	191 17 38.5	4 3 58.9	.6098302
	19	18 20 0.80	21 48 17.3	.9868260	22 26.7	194 51 26.2	3 42 12.0	.6152839
	20	18 24 3.20	21 56 5.9	.9950021	22 27.0	198 19 52.3	3 20 7.2	.6204873
	21	18 28 19.80	22 3 18.2	.0028683	22 27.5	201 43 20.2	2 57 50.5	.6254341
	22	18 32 49.27	22 9 49.0	.0104294	22 28.3	205 2 12.7	2 35 27.0	.6301191
	23	18 37 30.40	22 15 34.2	.0176903	22 29.2	208 16 50.2	2 13 1.2	.6345399
	24	18 42 22.12	22 20 29.3	.0246586	22 30.3	211 27 33.6	1 50 36.9	.6386941
	25	18 47 23.49	22 24 30.9	.0313427	22 31.5	214 34 42.4	1 28 17.4	.6425799
	26	18 52 33.64	22 27 35.8	.0377509	22 32.9	217 38 35.2	1 6 5.5	.6461970
	27	18 57 51.77	22 29 40.9	.0438925	22 34.3	220 39 29.5	0 44 3.8	.6495455
	28	19 3 17.19	22 30 43.9	.0497765	22 35.9	223 37 42.8	0 22 14.3	.6526253
	29	19 8 49.26	22 30 42.4	.0554123	22 37.6	226 33 31.0	0 0 38.9	.6554376
30	19 14 27.41	22 29 34.5	.0608083	22 39.4	229 27 10.0	0 20 40.8	.6579824	
Feb.	31	19 20 11.10	22 27 18.2	.0659739	22 41.2	232 18 54.6	0 41 43.0	.6602617
	1	19 25 59.87	22 23 52.1	.0709162	22 43.2	235 8 59.3	1 2 26.9	.6622756
	2	19 31 53.29	22 19 14.6	.0756444	22 45.2	237 57 38.0	1 22 50.9	.6640256
	3	19 37 50.99	22 13 24.5	.0801653	22 47.3	240 45 4.3	1 42 54.0	.6655125
	4	19 43 52.57	22 6 20.8	.0844866	22 49.4	243 31 31.6	2 2 35.1	.6667374
	5	19 49 57.76	21 58 2.0	.0886152	22 51.6	246 17 13.0	2 21 53.3	.6677005
	6	19 56 6.24	21 48 27.6	.0925568	22 53.9	249 2 20.8	2 40 47.3	.6684029
	7	20 2 17.73	21 37 36.8	.0963176	22 56.2	251 47 7.4	2 59 16.2	.6688448
	8	20 8 32.03	21 25 28.4	.0999027	22 58.5	254 31 45.4	3 17 18.8	.6690266
	9	20 14 48.89	21 12 2.2	.1033173	23 0.9	257 16 26.6	3 34 54.2	.6689485
10	20 21 8.13	20 57 17.4	.1065656	23 3.3	260 1 23.8	3 52 1.0	.6686102	

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
<i>South.</i>							
Jan. 1	^h 18 ^m 19 ^s 25.93	—12.66	0.34	20 16 45.6	+11.8	4.8	12.6
2	18 14 37.50	11.33	0.33	20 12 53.2	7.6	4.7	12.4
3	18 10 23.82	9.78	0.33	20 10 41.9	+3.3	4.6	12.2
4	18 6 49.13	8.09	0.32	20 10 12.5	—0.9	4.5	12.0
5	18 3 55.88	6.34	0.32	20 11 22.0	4.9	4.5	11.8
6	18 1 44.87	4.58	0.31	20 14 5.5	8.7	4.4	11.6
7	18 0 15.69	2.86	0.30	20 18 14.8	12.1	4.3	11.3
8	17 59 27.03	—1.21	0.30	20 23 40.6	15.0	4.2	11.0
9	17 59 16.83	+0.34	0.29	20 30 11.8	17.5	4.1	10.8
10	17 59 42.73	1.80	0.29	20 37 37.1	19.5	4.0	10.5
11	18 0 42.14	3.14	0.28	20 45 44.8	21.0	3.9	10.3
12	18 2 12.41	4.37	0.27	20 54 23.5	22.1	3.8	10.1
13	18 4 10.90	5.49	0.26	21 3 22.4	22.7	3.7	9.9
14	18 6 35.16	6.52	0.26	21 12 31.1	22.9	3.6	9.6
15	18 9 22.86	7.44	0.25	21 21 40.2	22.7	3.5	9.4
16	18 12 31.78	8.29	0.25	21 30 40.9	22.2	3.5	9.2
17	18 15 59.97	9.05	0.25	21 39 25.0	21.4	3.4	9.0
18	18 19 45.60	9.74	0.24	21 47 45.7	20.3	3.3	8.8
19	18 23 47.05	10.37	0.24	21 55 36.5	18.9	3.3	8.7
20	18 28 2.83	10.94	0.23	22 2 51.5	17.3	3.2	8.5
21	18 32 31.61	11.45	0.23	22 9 25.2	15.5	3.2	8.4
22	18 37 12.17	11.92	0.22	22 15 13.6	13.5	3.1	8.2
23	18 42 3.43	12.35	0.22	22 20 12.2	11.4	3.1	8.1
24	18 47 4.45	12.73	0.22	22 24 17.4	9.1	3.0	8.0
25	18 52 14.34	13.09	0.22	22 27 26.1	6.6	3.0	7.9
26	18 57 32.30	13.41	0.21	22 29 35.0	4.1	2.9	7.8
27	19 2 57.63	13.70	0.21	22 30 41.9	—1.5	2.9	7.7
28	19 8 29.69	13.97	0.21	22 30 44.3	+1.3	2.9	7.6
29	19 14 7.90	14.21	0.20	22 29 40.2	4.1	2.8	7.5
30	19 19 51.72	14.44	0.20	22 27 27.6	7.0	2.8	7.4
31	19 25 40.68	14.64	0.20	22 24 5.3	9.9	2.8	7.3
Feb. 1	19 31 34.34	14.83	0.19	22 19 31.2	12.9	2.7	7.2
2	19 37 32.32	15.00	0.19	22 13 44.5	16.0	2.7	7.1
3	19 43 34.22	15.16	0.19	22 6 44.0	19.1	2.7	7.1
4	19 49 39.79	15.30	0.19	21 58 28.2	22.2	2.6	7.0
5	19 55 48.68	15.44	0.19	21 48 56.6	25.4	2.6	6.9
6	20 2 0.61	15.56	0.19	21 38 8.4	28.6	2.6	6.9
7	20 8 15.38	15.67	0.19	21 26 2.4	31.9	2.6	6.8
8	20 14 32.75	15.78	0.19	21 12 38.2	35.1	2.6	6.8
9	20 20 52.52	15.87	0.18	20 57 55.3	38.4	2.5	6.7
10	20 27 14.53	+15.96	0.18	20 41 52.7	+41.8	2.5	6.7

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>South.</i> <i>° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>South.</i> <i>° ' "</i>	<i>9</i>
Feb. 10	20 21 8.13	20 57 17.4	1065656	23 3.3	260 1 23.8	3 52 1.0	.6686102
11	20 27 29.58	20 41 13.3	1096520	23 5.8	262 46 48.94	8 37.9	.6680119
12	20 33 53.09	20 23 49.8	1125793	23 8.2	265 32 54.54	24 43.6	.6671528
13	20 40 18.47	20 5 6.1	1153512	23 10.8	268 19 52.54	40 16.5	.6660327
14	20 46 45.65	19 45 1.8	1179700	23 13.3	271 7 55.84	55 14.9	.6646505
15	20 53 14.51	19 23 36.8	1204370	23 15.9	273 57 16.95	9 37.0	.6630054
16	20 59 44.95	19 0 50.6	1227543	23 18.5	276 48 9.2	5 23 20.7	.6610970
17	21 6 16.90	18 36 42.9	1249228	23 21.1	279 40 46.3	5 36 23.9	.6589240
18	21 12 50.29	18 11 13.5	1269422	23 23.7	282 35 21.1	5 48 44.0	.6564851
19	21 19 25.07	17 44 22.2	1288131	23 26.4	285 32 8.56	0 18.4	.6537796
20	21 26 1.19	17 16 8.8	1305342	23 29.1	288 31 22.76	11 4.0	.6508066
21	21 32 38.63	16 46 33.3	1321041	23 31.8	291 33 19.2	6 20 57.5	.6475656
22	21 39 17.37	16 15 35.5	1335205	23 34.5	294 38 13.2	6 29 55.3	.6440556
23	21 45 57.42	15 43 15.2	1347809	23 37.3	297 46 21.76	6 37 53.3	.6402768
24	21 52 38.74	15 9 32.9	1358818	23 40.0	300 58 1.36	6 44 47.2	.6362297
25	21 59 21.38	14 34 28.2	1368184	23 42.8	304 13 29.56	50 32.1	.6319151
26	22 6 5.32	13 58 1.6	1375857	23 45.7	307 33 4.86	6 55 2.8	.6273348
27	22 12 50.61	13 20 13.1	1381781	23 48.5	310 57 6.26	6 58 13.5	.6224920
28	22 19 37.25	12 41 3.3	1385880	23 51.4	314 25 53.36	59 58.2	.6173900
Mar. 1	22 26 25.29	12 0 32.6	1388078	23 54.3	317 59 46.87	0 9.9	.6120352
2	22 33 14.75	11 18 41.6	1388282	23 57.2	321 39 7.66	6 58 41.7	.6064349
3	22 40 5.65	10 35 31.2	1386389	*	325 24 17.46	55 55.7	.6005992
4	22 46 58.03	9 51 2.4	1382286	0 0.1	329 15 38.26	50 14.1	.5945397
5	22 53 51.89	9 5 16.3	1375844	0 3.1	333 13 32.76	42 58.4	.5882727
6	23 0 47.24	8 18 14.7	1366925	0 6.0	337 18 23.56	33 30.0	.5818168
7	23 7 44.05	7 29 59.7	1355373	0 9.0	341 30 32.66	21 40.1	.5751961
8	23 14 42.31	6 40 33.0	1341020	0 12.1	345 50 22.26	7 20.2	.5684387
9	23 21 41.93	5 49 58.0	1323677	0 15.1	350 18 12.8	5 50 22.2	.5615789
10	23 28 42.82	4 58 17.9	1303162	0 18.2	354 54 23.95	30 38.7	.5546561
11	23 35 44.81	4 5 36.8	1279238	0 21.3	359 39 12.58	8 3.5	.5477170
12	23 42 47.71	3 11 59.3	1251699	0 24.4	4 32 52.9	4 42 32.4	.5408149
13	23 49 51.25	2 17 31.0	1220312	0 27.5	9 35 35.44	14 3.4	.5340107
14	23 56 55.07	1 22 18.5	1184837	0 30.7	14 47 24.8	3 42 37.7	.5273733
15	0 3 58.74	0 26 29.4	1145030	0 33.8	20 8 21.2	3 8 20.3	.5209771
		<i>North.</i>					
16	0 11 1.72	0 29 47.8	1100655	0 36.9	25 38 16.22	31 20.6	.5149027
17	0 18 3.38	1 26 23.5	1051477	0 40.0	31 16 54.9	1 51 53.3	.5092359
18	0 25 2.97	2 23 6.7	0997279	0 43.1	37 3 51.5	1 10 18.8	.5040641
19	0 31 59.61	3 19 45.8	0937875	0 46.1	42 58 31.6	0 27 3.3	.4994748
		<i>North.</i>					
20	0 38 52.32	4 16 7.6	0873099	0 49.1	49 0 8.9	0 17 21.1	.4955519
21	0 45 39.97	5 11 58.2	0802843	0 51.9	55 7 47.2	1 2 17.6	.4923716
22	0 52 21.39	6 7 3.5	0727032	0 54.6	61 20 20.5	1 47 5.1	.4899998

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Std. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				South.			
Feb. 10	^h 20 ^m 27 ^s 14.53	^s +15.96	^s 0.18	[°] 20 ['] 41 ["] 52.7	⁺ 41.8	2.5	6.7
11	20 33 38.62	16.04	0.18	20 24 30.5	45.1	2.5	6.6
12	20 40 4.59	16.12	0.18	20 5 47.9	48.5	2.5	6.6
13	20 46 32.38	16.19	0.18	19 45 44.3	51.8	2.5	6.5
14	20 53 1.87	16.26	0.18	19 24 19.8	55.2	2.5	6.5
15	20 59 32.97	16.33	0.18	19 1 33.7	58.6	2.5	6.5
16	21 6 5.58	16.39	0.17	18 37 25.8	62.0	2.4	6.4
17	21 12 39.64	16.45	0.17	18 11 55.9	65.5	2.4	6.4
18	21 19 15.11	16.51	0.17	17 45 3.8	68.9	2.4	6.4
19	21 25 51.93	16.56	0.17	17 16 49.2	72.3	2.4	6.4
20	21 32 30.09	16.62	0.17	16 47 12.3	75.8	2.4	6.3
21	21 39 9.55	16.67	0.17	16 16 12.7	79.2	2.4	6.3
22	21 45 50.33	16.73	0.17	15 43 50.2	82.7	2.4	6.3
23	21 52 32.40	16.78	0.17	15 10 5.4	86.1	2.4	6.3
24	21 59 15.79	16.84	0.17	14 34 58.0	89.5	2.4	6.3
25	22 6 0.49	16.89	0.16	13 58 28.2	93.0	2.3	6.3
26	22 12 46.56	16.95	0.16	13 20 36.1	96.4	2.3	6.2
27	22 19 33.99	17.01	0.16	12 41 22.4	99.8	2.3	6.2
28	22 26 22.84	17.07	0.15	12 0 47.5	103.1	2.3	6.2
Mar. 1	22 33 13.12	17.12	0.15	11 18 51.8	106.5	2.3	6.2
2	22 40 4.84	17.19	0.15	10 35 36.4	109.8	2.3	6.2
3	22 46 58.06	17.25	0.15	9 51 2.2	113.1	2.3	6.2
4	22 53 52.77	17.31	0.15	9 5 10.4	116.3	2.3	6.2
5	23 0 48.99	17.37	0.15	8 18 2.7	119.4	2.3	6.2
6	23 7 46.68	17.43	0.16	7 29 41.2	122.4	2.4	6.3
7	* * *	*	*	* * *	*	*	*
8	23 14 45.83	17.49	0.16	6 40 7.8	125.3	2.4	6.3
9	23 21 46.36	17.55	0.16	5 49 25.7	128.1	2.4	6.3
10	23 28 48.16	17.60	0.16	4 57 38.3	130.8	2.4	6.4
11	23 35 51.07	17.64	0.16	4 4 49.5	133.2	2.4	6.4
12	23 42 54.90	17.67	0.16	3 11 4.2	135.5	2.4	6.4
13	23 49 59.36	17.69	0.17	2 16 28.0	137.5	2.5	6.5
14	23 57 4.10	17.70	0.17	1 21 7.4	139.2	2.5	6.5
15	0 4 8.68	17.68	0.17	0 25 10.4	140.5	2.5	6.6
				North.			
16	0 11 12.55	17.64	0.17	0 31 14.7	141.5	2.5	6.7
17	0 18 15.07	17.57	0.17	1 27 58.1	142.0	2.5	6.7
18	0 25 15.48	17.46	0.17	2 24 48.6	142.1	2.6	6.8
19	0 32 12.89	17.32	0.17	3 21 34.4	141.6	2.6	6.9
20	0 39 6.29	17.13	0.17	4 18 2.2	140.6	2.6	7.0
21	0 45 54.55	16.89	0.18	5 13 58.1	139.0	2.7	7.1
22	0 52 36.48	+16.60	0.18	6 9 7.9	+136.7	2.7	7.2

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
		North.	°			North.	9
	^h ^m ^s	[°] ['] ["]		^h ^m	[°] ['] ["]	[°] ['] ["]	
Mar. 22	0 52 21.39	6 7 3.5	.0727032	0 54.6	61 20 20.5	1 47 5.1	.4899998
23	0 58 55.23	7 1 8.4	.0645658	0 57.2	67 36 32.5	2 31 0.3	.4884869
24	1 5 20.18	7 53 57.8	.0558771	0 59.7	73 55 1.1	3 13 19.1	.4878674
25	1 11 34.79	8 45 16.9	.0466477	1 2.0	80 14 18.1	3 53 19.5	.4881540
26	1 17 37.61	9 34 51.1	.0368972	1 4.1	86 32 51.9	4 30 22.7	.4893413
27	1 23 27.23	10 22 26.6	.0266493	1 6.0	92 49 12.8	5 3 55.5	.4914020
28	1 29 2.23	11 7 50.4	.0159343	1 7.6	99 1 53.4	5 33 31.6	.4942916
29	1 34 21.25	11 50 50.7	.0047888	1 9.0	105 9 33.0	5 58 52.6	.4979495
		9					
30	1 39 22.99	12 31 16.6	.9932535	1 10.0	111 10 59.4	6 19 47.9	.5023030
31	1 44 6.23	13 8 58.7	.9813734	1 10.8	117 5 10.4	6 36 14.6	.5072701
Apr. 1	1 48 29.87	13 43 48.8	.9691972	1 11.2	122 51 15.1	6 48 16.5	.5127651
2	1 52 32.86	14 15 39.0	.9567774	1 11.3	128 28 33.2	6 56 3.3	.5186995
3	1 56 14.31	14 44 23.4	.9441687	1 11.1	133 56 37.3	6 59 49.0	.5249868
4	1 59 33.40	15 9 56.3	.9314289	1 10.4	139 15 9.4	6 59 51.1	.5315441
5	2 2 29.45	15 32 13.1	.9186176	1 9.4	144 24 2.3	6 56 28.6	.5382948
6	2 5 1.95	15 51 9.7	.9057972	1 8.0	149 23 16.0	6 50 2.0	.5451679
7	2 7 10.48	16 6 42.9	.8930322	1 6.1	154 12 58.2	6 40 51.7	.5521002
8	2 8 54.78	16 18 49.6	.8803898	1 3.9	158 53 21.9	6 29 17.4	.5590347
9	2 10 14.81	16 27 28.2	.8679396	1 1.3	163 24 44.5	6 15 38.1	.5659225
10	2 11 10.69	16 32 37.5	.8557533	0 58.3	167 47 27.1	6 0 11.5	.5727218
11	2 11 42.77	16 34 16.9	.8439046	0 54.9	172 1 52.7	5 43 13.7	.5793958
12	2 11 51.63	16 32 27.8	.8324693	0 51.1	176 8 26.4	5 24 59.4	.5859151
13	2 11 38.15	16 27 12.7	.8215230	0 46.9	180 7 33.2	5 5 41.8	.5922542
14	2 11 3.38	16 18 35.5	.8111434	0 42.4	183 59 39.4	4 45 32.4	.5983918
15	2 10 8.77	16 6 42.7	.8014049	0 37.5	187 45 10.7	4 24 41.7	.6043115
16	2 8 55.96	15 51 42.9	.7923806	0 32.4	191 24 32.5	4 3 18.6	.6099995
17	2 7 26.93	15 33 47.1	.7841382	0 27.0	194 58 9.6	3 41 31.0	.6154457
18	2 5 43.86	15 13 9.2	.7767408	0 21.4	198 26 26.0	3 19 25.7	.6206414
19	2 3 49.13	14 50 5.5	.7702432	0 15.5	201 49 45.3	2 57 8.8	.6255798
20	2 1 45.36	14 24 55.2	.7646907	0 9.5	205 8 29.1	2 34 45.2	.6302572
21	1 59 35.21	13 57 59.5	.7601174	{ 2 3 11 }	208 22 59.0	2 12 19.4	.6346701
22	1 57 21.41	13 29 41.6	.7565459	23 51.2	211 33 35.4	1 49 55.1	.6388159
23	1 55 6.71	13 0 26.3	.7539860	23 45.0	214 40 37.7	1 27 35.8	.6426936
24	1 52 53.75	12 30 38.7	.7524336	23 39.0	217 44 24.8	1 5 24.2	.6463023
25	1 50 45.05	12 0 44.5	.7518738	23 33.0	220 45 13.9	0 43 22.9	.6496424
26	1 48 42.98	11 31 8.5	.7522777	23 27.2	223 43 22.2	0 21 33.7	.6527142
		South.					
27	1 46 49.59	11 2 14.3	.7536084	23 21.6	226 39 6.3	0 0 1.1	.6555184
28	1 45 6.79	10 34 23.9	.7558182	23 16.1	229 32 41.3	0 21 20.2	.6580553
29	1 43 36.15	10 7 57.1	.7588539	23 10.9	232 24 22.6	0 42 22.1	.6603263
30	1 42 19.01	9 43 11.1	.7626561	23 5.9	235 14 24.3	1 3 5.3	.6623323
May 1	1 41 16.41	9 20 20.8	.7671634	23 1.2	238 3 0.9	1 23 28.7	.6640741

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	["]	["]
Mar. 22	0 52 36.48	+16.60	0.18	North. 6 9 7.9	+136.7	2.7	7.2
23	0 59 10.71	16.25	0.18	7 3 16.0	133.8	2.8	7.4
24	1 5 35.93	15.84	0.18	7 56 7.5	130.3	2.8	7.5
25	1 11 50.67	15.38	0.19	8 47 27.3	126.2	2.9	7.7
26	1 17 53.47	14.85	0.20	9 37 0.9	121.5	3.0	7.9
27	1 23 42.91	14.26	0.20	10 24 34.4	116.2	3.1	8.1
28	1 29 17.58	13.62	0.21	11 9 54.8	110.4	3.1	8.3
29	1 34 36.11	12.92	0.21	11 52 50.5	104.2	3.2	8.5
30	1 39 37.20	12.17	0.22	12 33 10.5	97.5	3.3	8.7
Apr. 1	1 44 19.65	11.37	0.23	13 10 45.5	90.4	3.4	9.0
2	1 48 42.38	10.52	0.24	13 45 27.6	83.0	3.5	9.2
3	1 52 44.35	9.63	0.25	14 17 8.8	75.4	3.6	9.5
4	1 56 24.67	8.71	0.26	14 45 43.5	67.5	3.7	9.8
5	1 59 42.55	7.77	0.26	15 11 6.3	59.4	3.8	10.1
6	2 2 37.34	6.80	0.27	15 33 12.5	51.1	3.9	10.4
7	2 5 8.56	5.81	0.27	15 51 58.3	42.7	4.0	10.7
8	2 7 15.80	4.80	0.28	16 7 20.8	34.2	4.1	11.0
9	2 8 58.84	3.79	0.29	16 19 17.1	25.6	4.3	11.3
10	2 10 17.68	2.78	0.30	16 27 45.7	16.9	4.4	11.6
11	2 11 12.45	1.79	0.31	16 32 45.6	+ 8.1	4.5	12.0
12	2 11 43.54	+ 0.81	0.32	16 34 16.5	- 0.5	4.6	12.3
13	2 11 51.54	- 0.14	0.33	16 32 20.1	9.1	4.8	12.6
14	2 11 37.36	1.04	0.34	16 26 59.0	17.6	4.9	13.0
15	2 11 2.05	1.89	0.34	16 18 17.2	25.8	5.0	13.3
16	2 10 7.09	2.68	0.35	16 6 21.5	33.8	5.1	13.6
17	2 8 54.12	3.39	0.36	15 51 20.5	41.3	5.2	13.8
18	2 7 25.11	4.01	0.37	15 33 25.2	48.3	5.3	14.1
19	2 5 42.23	4.54	0.37	15 12 49.6	54.6	5.4	14.4
20	2 3 47.84	4.97	0.38	14 49 49.8	60.2	5.5	14.6
21	2 1 44.52	5.29	0.38	14 24 44.8	65.0	5.6	14.8
22	{1 55 7.54}	{5.57}	{0.39}	{13 0 37.2}	{73.7}	{5.7}	{15.1}
23	1 52 55.12	5.45	0.39	12 30 57.4	74.5	5.7	15.2
24	1 50 46.89	5.23	0.39	12 1 10.7	74.2	5.7	15.2
25	1 48 45.19	4.91	0.39	11 31 41.5	73.0	5.7	15.2
26	1 46 52.07	4.51	0.39	11 2 53.2	70.8	5.7	15.1
27	1 45 9.39	4.04	0.39	10 35 7.5	67.8	5.7	15.1
28	1 43 38.72	3.51	0.39	10 8 44.1	64.0	5.7	15.0
29	1 42 21.40	2.93	0.38	9 44 0.0	59.5	5.6	14.8
30	1 41 18.48	2.31	0.37	9 21 10.1	54.5	5.5	14.7
May 1	1 40 30.75	- 1.66	0.37	9 0 26.3	- 49.1	5.5	14.5

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>9</i>	<i>h m</i>	<i>° ' "</i>	<i>South. ° ' "</i>	<i>9</i>
May 1	1 41 16.41	9 20 20.8	.7671634	23 1.2	238 3 0.9	1 23 28.7	.6640741
2	1 40 29.14	8 59 38.1	.7723105	22 56.7	240 50 25.3	1 43 31.2	.6655534
3	1 39 57.79	8 41 12.6	.7780355	22 52.5	243 36 51.0	2 3 11.6	.6667702
4	1 39 42.69	8 25 11.2	.7842760	22 48.6	246 22 31.2	2 22 29.0	.6677254
5	1 39 44.06	8 11 38.9	.7909721	22 45.0	249 7 38.1	2 41 22.3	.6684198
6	1 40 1.89	8 0 38.4	.7980670	22 41.6	251 52 24.3	2 59 50.3	.6688540
7	1 40 36.08	7 52 10.5	.8055085	22 38.5	254 37 2.7	3 17 52.3	.6690281
8	1 41 26.43	7 46 15.1	.8132465	22 35.6	257 21 44.6	3 35 26.8	.6689421
9	1 42 32.67	7 42 50.5	.8212367	22 33.0	260 6 42.5	3 52 32.6	.6685962
10	1 43 54.48	7 41 53.9	.8294380	22 30.7	262 52 8.9	4 9 8.6	.6679898
11	1 45 31.46	7 43 21.9	.8378136	22 28.6	265 38 15.9	4 25 13.3	.6671229
12	1 47 23.22	7 47 10.6	.8463304	22 26.8	268 25 15.7	4 40 45.1	.6659946
13	1 49 29.37	7 53 15.1	.8549595	22 25.1	271 13 21.5	4 55 42.5	.6646045
14	1 51 49.47	8 1 30.8	.8636744	22 23.7	274 2 45.9	5 10 3.4	.6629517
15	1 54 23.15	8 11 52.5	.8724511	22 22.6	276 53 41.3	5 23 45.9	.6610351
16	1 57 10.05	8 24 14.9	.8812695	22 21.6	279 46 21.7	5 36 47.8	.6588538
17	2 0 9.78	8 38 32.5	.8901110	22 20.9	282 41 0.7	5 49 6.5	.6564069
18	2 3 22.03	8 54 40.0	.8989598	22 20.3	285 37 52.5	6 0 39.4	.6536934
19	2 6 46.51	9 12 32.1	.9078012	22 20.0	288 37 11.7	6 11 23.4	.6507120
20	2 10 22.96	9 32 3.1	.9166227	22 19.8	291 39 13.8	6 21 15.3	.6474629
21	2 14 11.14	9 53 8.0	.9254121	22 19.8	294 44 14.0	6 30 11.2	.6439448
22	2 18 10.88	10 15 41.4	.9341592	22 20.1	297 52 28.8	6 38 7.3	.6401578
23	2 22 22.01	10 39 37.9	.9428541	22 20.5	301 4 15.3	6 44 59.1	.6361023
24	2 26 44.43	11 4 52.3	.9514879	22 21.1	304 19 51.0	6 50 41.8	.6317794
25	2 31 18.08	11 31 19.6	.9600521	22 21.9	307 39 34.4	6 55 10.1	.6271910
26	2 36 2.89	11 58 54.2	.9685380	22 22.9	311 3 44.5	6 58 18.2	.6223402
27	2 40 58.89	12 27 31.3	.9769375	22 24.0	314 32 41.0	7 0 0.0	.6172307
28	2 46 6.09	12 57 5.4	.9852418	22 25.4	318 6 44.3	7 0 8.8	.6118678
29	2 51 24.57	13 27 31.1	.9934427	22 26.9	321 46 15.6	6 58 37.2	.6062600
30	2 56 54.44	13 58 43.1	.0015314	22 28.7	325 31 36.8	6 55 17.8	.6004169
June 1	3 2 35.82	14 30 35.1	.0094975	22 30.6	329 23 9.5	6 50 2.4	.5943506
2	3 8 28.86	15 3 2.0	.0173310	22 32.7	333 21 16.7	6 42 42.7	.5880771
3	3 14 33.75	15 35 57.1	.0250207	22 35.1	337 26 20.5	6 33 10.0	.5816165
4	3 20 50.69	16 9 14.2	.0325540	22 37.6	341 38 43.6	6 21 15.5	.5749910
5	3 27 19.87	16 42 46.5	.0399181	22 40.3	345 58 47.6	6 6 50.8	.5682298
6	3 34 1.51	17 16 26.5	.0470976	22 43.3	350 26 53.2	5 49 47.8	.5613673
7	3 40 55.82	17 50 6.5	.0540770	22 46.5	355 3 20.0	5 29 59.0	.5544428
8	3 48 2.94	18 23 38.2	.0608385	22 49.9	359 48 24.7	5 7 18.5	.5475033
9	3 55 23.03	18 56 52.7	.0673633	22 53.5	4 42 21.4	4 41 42.0	.5406036
10	4 2 56.20	19 29 40.3	.0736316	22 57.3	9 45 20.1	4 13 7.4	.5338036
11	4 10 42.45	20 1 51.4	.0796214	23 1.4	14 57 26.6	3 41 36.3	.5271718
12	4 18 41.73	20 33 14.7	.0853102	23 5.6	20 18 39.5	3 7 13.6	.5207838

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
				° ' "	"	"	"
May 1	h m s	s	s	9 0 26.3	-49.1	5.5	14.5
2	1 39 58.82	1.00	0.36	8 41 58.2	43.3	5.4	14.3
3	1 39 43.03	0.32	0.36	8 25 52.9	37.2	5.3	14.1
4	1 39 43.60	+0.36	0.35	8 12 15.7	30.9	5.2	13.9
5	1 40 0.56	1.04	0.35	8 1 9.2	24.6	5.2	13.7
6	1 40 33.80	1.72	0.34	7 52 34.3	18.3	5.1	13.4
7	1 41 23.15	2.39	0.33	7 46 31.2	12.0	5.0	13.2
8	1 42 28.36	3.04	0.33	7 42 58.4	-5.8	4.9	13.0
9	1 43 49.11	3.68	0.32	7 41 53.2	+0.3	4.8	12.7
10	1 45 25.01	4.31	0.31	7 43 12.3	6.3	4.7	12.5
11	1 47 15.69	4.92	0.30	7 46 52.0	12.0	4.6	12.2
12	1 49 20.77	5.51	0.30	7 52 47.4	17.6	4.5	12.0
13	1 51 39.82	6.08	0.29	8 0 54.1	23.0	4.4	11.8
14	1 54 12.47	6.64	0.29	8 11 7.1	28.1	4.3	11.5
15	1 56 58.35	7.18	0.29	8 23 21.0	33.0	4.3	11.3
16	1 59 57.10	7.71	0.28	8 37 30.3	37.7	4.2	11.1
17	2 3 8.40	8.23	0.27	8 53 30.0	42.2	4.1	10.8
18	2 6 31.97	8.73	0.27	9 11 14.6	46.5	4.0	10.6
19	2 10 7.56	9.23	0.26	9 30 38.6	50.5	3.9	10.4
20	2 13 54.91	9.72	0.26	9 51 37.1	54.3	3.9	10.2
21	2 17 53.85	10.20	0.25	10 14 4.5	57.9	3.8	10.0
22	2 22 4.23	10.67	0.25	10 37 55.6	61.3	3.7	9.8
23	2 26 25.95	11.14	0.24	11 3 5.2	64.5	3.6	9.6
24	2 30 58.94	11.61	0.23	11 29 28.4	67.4	3.5	9.4
25	2 35 43.15	12.08	0.23	11 56 59.4	70.1	3.5	9.2
26	2 40 38.58	12.54	0.23	12 25 33.6	72.7	3.4	9.1
27	2 45 45.27	13.01	0.23	12 55 5.5	75.0	3.4	8.9
28	2 51 3.30	13.49	0.23	13 25 29.7	77.0	3.3	8.7
29	2 56 32.78	13.97	0.22	13 56 40.8	78.9	3.2	8.6
30	3 2 13.84	14.45	0.22	14 28 32.7	80.4	3.2	8.4
31	3 8 6.61	14.95	0.22	15 1 0.2	81.8	3.1	8.3
June 1	3 14 11.31	15.45	0.22	15 33 56.7	82.9	3.1	8.1
2	3 20 28.13	15.96	0.21	16 7 15.9	83.7	3.0	8.0
3	3 26 57.27	16.47	0.20	16 40 51.1	84.2	2.9	7.8
4	3 33 38.97	17.00	0.20	17 14 34.7	84.4	2.9	7.7
5	3 40 33.45	17.54	0.20	17 48 19.0	84.3	2.9	7.6
6	3 47 40.84	18.08	0.19	18 21 55.8	83.8	2.8	7.5
7	3 55 1.31	18.63	0.19	18 55 16.1	82.9	2.8	7.4
8	4 2 34.99	19.18	0.19	19 28 10.1	81.6	2.7	7.2
9	4 10 21.88	19.73	0.19	20 0 28.2	79.8	2.7	7.1
10	4 18 21.96	20.28	0.19	20 31 59.0	77.6	2.7	7.1
11	4 26 35.03	+20.81	0.18	21 2 31.6	+75.0	2.6	7.0

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
<div> <div> <div>h m s</div> <div>° ' "</div> <div>°</div> <div>h m</div> </div> <div> <div>North.</div> <div>South.</div> <div>9</div> </div> </div>							
June 11	4 18 41.73	20 33 14.7	0853102	23 5.6	20 18 39.5	3 7 13.6	5207838
12	4 26 53.85	21 3 39.3	0906746	23 10.1	25 48 50.9	2 30 9.1	5147204
13	4 35 18.51	21 32 53.1	0956913	23 14.8	31 27 45.3	1 50 37.5	5090671
14	4 43 55.27	22 0 44.2	1003303	23 19.6	37 14 56.5	1 8 59.5	5039116
15	4 52 43.49	22 27 0.1	1045864	23 24.7	43 9 49.2	0 25 41.6	4993417
16	5 1 42.40	22 51 29.0	1084206	23 29.9	49 11 38.5	0 18 44.4	4954399
17	5 10 51.01	23 13 58.5	1118187	23 35.3	55 19 26.8	1 3 41.2	4922835
18	5 20 8.19	23 34 17.6	1147652	23 40.7	61 32 7.7	1 48 27.6	4899370
19	5 29 32.63	23 52 15.9	1172465	23 46.3	67 48 25.5	2 32 20.5	4884510
20	5 39 2.85	24 7 44.1	1192535	23 52.0	74 6 56.3	3 14 35.8	4878588
21	5 48 37.31	24 20 34.8	1207817	23 57.7	80 26 12.7	3 54 31.1	4881732
22	5 58 14.39	24 30 41.8	1218320	* *	86 44 43.8	4 31 28.2	4893877
23	6 7 52.39	24 38 1.2	1224082	0 3.4	93 0 58.9	5 4 54.1	4914746
24	6 17 29.67	24 42 30.7	1225201	0 9.1	99 13 31.2	5 34 22.5	4943890
25	6 27 4.65	24 44 9.9	1221805	0 14.7	105 21 0.5	5 59 35.4	4980693
26	6 36 35.81	24 43 0.3	1214062	0 20.3	111 22 14.5	6 20 22.4	5024434
27	6 46 1.75	24 39 5.0	1202162	0 25.8	117 16 11.0	6 36 40.8	5074280
28	6 55 21.22	24 32 28.4	1186315	0 31.2	123 1 59.2	6 48 34.7	5129375
29	7 4 33.11	24 23 16.1	1166746	0 36.5	128 39 0.5	6 56 13.8	5188843
30	7 13 36.49	24 11 34.9	1143682	0 41.6	134 6 47.0	6 59 52.4	5251810
July 1	7 22 30.53	23 57 31.9	1117350	0 46.6	139 25 1.5	6 59 47.8	5317457
2	7 31 14.61	23 41 15.1	1087978	0 51.4	144 33 36.5	6 56 19.4	5385018
3	7 39 48.19	23 22 52.6	1055783	0 56.0	149 32 32.2	6 49 47.5	5453780
4	7 48 10.89	23 2 32.5	1020964	1 0.5	154 21 56.7	6 40 32.4	5523104
5	7 56 22.42	22 40 23.4	0983721	1 4.7	159 2 3.2	6 28 54.0	5592449
6	8 4 22.61	22 16 33.1	0944227	1 8.8	163 33 9.4	6 15 11.2	5661309
7	8 12 11.33	21 51 10.0	0902645	1 12.7	167 55 36.2	5 59 41.6	5729271
8	8 19 48.55	21 24 21.7	0859124	1 16.4	172 9 46.7	5 42 41.2	5795975
9	8 27 14.28	20 56 15.9	0813793	1 19.8	176 16 6.1	5 24 24.8	5861120
10	8 34 28.57	20 26 59.7	0766782	1 23.1	180 14 59.3	5 5 5.4	5924452
11	8 41 31.50	19 56 40.1	0718184	1 26.2	184 6 53.0	4 44 54.7	5985762
12	8 48 23.21	19 25 23.8	0668102	1 29.1	187 52 12.5	4 24 3.0	6044895
13	8 55 3.80	18 53 17.2	0616618	1 31.9	191 31 23.3	4 2 38.9	6101706
14	9 1 33.40	18 20 26.4	0563796	1 34.4	195 4 50.1	3 40 50.7	6156094
15	9 7 52.17	17 46 57.1	0509703	1 36.8	198 32 56.9	3 18 45.0	6207977
16	9 14 0.25	17 12 55.0	0454386	1 39.0	201 56 7.2	2 56 27.8	6257286
17	9 19 57.72	16 38 25.5	0397887	1 41.0	205 14 43.1	2 34 4.0	6303978
18	9 25 44.73	16 3 33.7	0340248	1 42.8	208 29 5.5	2 11 38.2	6348027
19	9 31 21.40	15 28 24.6	0281493	1 44.4	211 39 35.2	1 49 14.1	6389406
20	9 36 47.79	14 53 3.0	0221651	1 45.9	214 46 31.3	1 26 55.0	6428102
21	9 42 3.98	14 17 34.0	0160733	1 47.3	217 50 12.4	1 4 43.7	6464111

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Light Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
<div> <div>North.</div> <div>° ' "</div> </div>							
June 11	^h 4 ^m 26 ^s 35.03	^s +20.81	^s 0.18	21 2 31.5	["] +75.0	["] 2.6	["] 7.0
12	4 35 0.78	21.33	0.18	21 31 53.6	71.8	2.6	6.9
13	4 43 38.85	21.83	0.18	21 59 53.1	68.1	2.6	6.8
14	4 52 28.53	22.30	0.18	22 26 17.3	63.9	2.6	6.8
15	5 1 29.06	22.73	0.18	22 50 54.4	59.1	2.5	6.7
16	5 10 39.45	23.12	0.18	23 13 31.6	53.9	2.5	6.6
17	5 19 58.55	23.46	0.18	23 33 57.9	48.2	2.5	6.6
18	5 29 25.04	23.74	0.18	23 52 2.5	42.1	2.5	6.5
19	5 38 57.41	23.95	0.18	24 7 36.0	35.6	2.5	6.5
20	5 48 34.10	24.10	0.18	24 20 30.8	28.9	2.5	6.5
21	5 58 13.46	24.17	0.18	24 30 40.9	21.9	2.5	6.5
22	* * *	*	*	* * *	*	*	*
23	6 7 53.75	24.18	0.18	24 38 2.1	14.8	2.5	6.5
24	6 17 33.31	24.11	0.18	24 42 32.0	7.7	2.5	6.5
25	6 27 10.52	23.98	0.18	24 44 10.1	+ 0.5	2.5	6.5
26	6 36 43.85	23.79	0.18	24 42 58.1	- 6.5	2.5	6.5
27	6 46 11.86	23.54	0.18	24 38 59.3	13.4	2.5	6.5
28	6 55 33.28	23.24	0.18	24 32 18.0	20.0	2.5	6.5
29	7 4 47.00	22.90	0.18	24 23 0.1	26.4	2.5	6.6
30	7 13 52.08	22.52	0.18	24 11 12.5	32.5	2.5	6.6
July 1	7 22 47.66	22.11	0.18	23 57 2.4	38.3	2.5	6.6
2	7 31 33.13	21.68	0.18	23 40 37.8	43.7	2.5	6.7
3	7 40 7.95	21.22	0.18	23 22 7.2	48.8	2.5	6.7
4	7 48 31.76	20.76	0.18	23 1 38.8	53.5	2.6	6.8
5	7 56 44.25	20.28	0.18	22 39 21.2	57.9	2.6	6.8
6	8 4 45.25	19.80	0.18	22 15 22.3	61.9	2.6	6.9
7	8 12 34.66	19.32	0.18	21 49 50.8	65.6	2.6	7.0
8	8 20 12.45	18.83	0.18	21 22 54.2	69.0	2.6	7.0
9	8 27 38.65	18.35	0.18	20 54 40.3	72.1	2.7	7.1
10	8 34 53.29	17.87	0.19	20 25 16.2	74.9	2.7	7.2
11	8 41 56.47	17.40	0.19	19 54 49.2	77.3	2.8	7.3
12	8 48 48.33	16.93	0.19	19 23 25.9	79.6	2.8	7.4
13	8 55 28.99	16.46	0.19	18 51 12.6	81.5	2.8	7.5
14	9 1 58.57	16.00	0.19	18 18 15.8	83.2	2.8	7.5
15	9 8 17.24	15.55	0.20	17 44 40.8	84.7	2.9	7.6
16	9 14 25.15	15.11	0.20	17 10 33.6	85.9	2.9	7.7
17	9 20 22.38	14.66	0.20	16 35 59.5	86.9	2.9	7.8
18	9 26 9.09	14.23	0.21	16 1 3.6	87.7	3.0	7.9
19	9 31 45.40	13.80	0.21	15 25 51.0	88.3	3.0	8.0
20	9 37 11.39	13.37	0.22	14 50 26.6	88.7	3.1	8.2
21	9 42 27.11	12.94	0.22	14 14 55.2	88.9	3.1	8.3
22	9 47 32.62	+12.52	0.22	13 39 21.3	-88.9	3.2	8.4

MEAN TIME.								
Month and Day.	Geocentric.				Heliocentric.			
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
July 22	h m s	North.	°	h m	° ' "	North.	9	
	9 47 10.01	13 42 1.8	.0098762	1 48.4	220 50 56.4	0 42 42.6	.6497432	
23	9 52 5.89	13 6 31.4	.0035740	1 49.4	223 49 0.3	0 20 54.0	.6528069	
			9			South.		
24	9 56 51.61	12 31 7.0	.9971679	1 50.2	226 44 40.4	0 40.5	.6556029	
25	10 1 27.16	11 55 53.3	.9906588	1 50.8	229 38 11.8	0 21 59.1	.6581318	
26	10 5 52.45	11 20 55.0	.9840470	1 51.3	232 29 50.0	0 43 0.4	.6603949	
27	10 10 7.37	10 46 16.8	.9773335	1 51.6	235 19 49.0	1 3 43.1	.6623927	
28	10 14 11.79	10 12 3.2	.9705195	1 51.7	238 8 22.9	1 24 5.9	.6641270	
29	10 18 5.54	9 38 19.1	.9636057	1 51.6	240 55 45.4	1 44 7.7	.6655979.	
30	10 21 48.40	9 5 9.7	.9565933	1 51.4	243 42 10.0	2 3 47.5	.6668065	
31	10 25 20.13	8 32 39.9	.9494848	1 51.0	246 27 49.0	2 23 4.2	.6677540	
Aug. 1	10 28 40.41	8 0 55.3	.9422837	1 50.3	249 12 55.1	2 41 56.6	.6684403	
2	10 31 48.93	7 30 1.3	.9349932	1 49.5	251 57 41.1	3 0 24.0	.6688666	
3	10 34 45.30	7 0 4.2	.9276187	1 48.5	254 42 19.1	3 18 25.0	.6690325	
4	10 37 29.09	6 31 9.9	.9201670	1 47.3	257 27 1.2	3 35 58.6	.6689385	
5	10 39 59.83	6 3 25.1	.9126455	1 45.8	260 12 0.1	3 53 3.7	.6685844	
6	10 42 17.03	5 36 56.8	.9050650	1 44.2	262 57 27.9	4 9 38.8	.6679701	
7	10 44 20.11	5 11 52.3	.8974385	1 42.3	265 43 36.4	4 25 42.5	.6670950	
8	10 46 8.52	4 48 19.4	.8897816	1 40.1	268 30 38.4	4 41 13.3	.6659587	
9	10 47 41.64	4 26 26.4	.8821128	1 37.7	271 18 46.2	4 56 9.4	.6645603	
10	10 48 58.82	4 6 21.7	.8744550	1 35.0	274 8 13.0	5 10 29.2	.6628991	
11	10 49 59.42	3 48 14.4	.8668347	1 32.1	276 59 11.7	5 24 10.6	.6609745	
12	10 50 42.77	3 32 14.1	.8592841	1 28.9	279 51 56.0	5 37 11.2	.6587848	
13	10 51 8.29	3 18 30.4	.8518407	1 25.3	282 46 39.0	5 49 28.6	.6563297	
14	10 51 15.39	3 7 13.2	.8445472	1 21.5	285 43 35.3	6 1 0.1	.6536076	
15	10 51 3.56	2 58 32.4	.8374542	1 17.4	288 42 59.4	6 11 42.5	.6506181	
16	10 50 32.41	2 52 37.7	.8306175	1 12.9	291 45 6.4	6 21 32.7	.6473601	
17	10 49 41.67	2 49 38.3	.8241015	1 8.1	294 50 12.4	6 30 26.9	.6438335	
18	10 48 31.31	2 49 42.6	.8179773	1 3.0	297 58 33.6	6 38 21.0	.6400381	
19	10 47 1.47	2 52 57.7	.8123231	0 57.6	301 10 27.1	6 45 10.8	.6359744	
20	10 45 12.67	2 59 28.8	.8072239	0 51.8	304 26 10.0	6 50 51.2	.6316432	
21	10 43 5.71	3 9 19.2	.8027692	0 45.8	307 46 1.3	6 55 17.1	.6270465	
22	10 40 41.81	3 22 28.8	.7990533	0 39.5	311 10 19.6	6 58 22.7	.6221872	
23	10 38 2.63	3 38 54.2	.7961697	0 32.9	314 39 25.2	7 0 1.8	.6170694	
24	10 35 10.33	3 58 28.0	.7942120	0 26.1	318 13 38.1	7 0 7.5	.6116990	
25	10 32 7.51	4 20 58.1	.7932676	0 19.2	321 53 19.8	6 58 32.8	.6060838	
26	10 28 57.22	4 46 8.4	.7934150	0 12.1	325 38 51.9	6 55 9.9	.6002334	
27	10 25 43.00	5 13 37.4	.7947196	{ 11 11.8 }	329 30 36.2	6 49 50.9	.5941605	
28	10 22 28.66	5 43 0.1	.7972308	23 50.7	333 28 55.7	6 42 27.2	.5878806	
29	10 19 18.39	6 13 46.7	.8009767	23 43.7	337 34 12.3	6 32 50.2	.5814138	
30	10 16 16.38	6 45 25.7	.8059633	23 37.0	341 46 49.1	6 20 51.3	.5747835	
31	10 13 26.95	7 17 22.6	.8121723	23 30.5	346 7 7.1	6 21.8	.5680185	

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
				North.			
	^h ^m ^s	^s	^s	[°] ['] ["]	["]	["]	["]
July 22	9 47 32.62	+12.52	0.22	13 39 21.3	-88.9	3.2	8.4
23	9 52 27.94	12.09	0.22	13 3 49.7	88.7	3.2	8.5
24	9 57 13.05	11.67	0.22	12 28 24.7	88.3	3.2	8.6
25	10 1 47.93	11.24	0.22	11 53 11.2	87.8	3.3	8.8
26	10 6 12.50	10.81	0.22	11 18 13.6	87.0	3.4	8.9
27	10 10 26.67	10.37	0.22	10 43 36.7	86.0	3.4	9.1
28	10 14 30.30	9.93	0.23	10 9 25.0	84.9	3.5	9.2
29	10 18 23.22	9.48	0.23	9 35 43.6	83.5	3.5	9.3
30	10 22 5.19	9.02	0.24	9 2 37.4	82.0	3.6	9.5
31	10 25 35.98	8.55	0.25	8 30 11.4	80.2	3.7	9.7
Aug. 1	10 28 55.29	8.06	0.25	7 58 31.3	78.1	3.7	9.8
2	10 32 2.79	7.56	0.25	7 27 42.5	75.9	3.8	10.0
3	10 34 58.09	7.04	0.25	6 57 51.2	73.4	3.8	10.1
4	10 37 40.78	6.51	0.26	6 29 3.4	70.6	3.9	10.3
5	10 40 10.38	5.95	0.26	6 1 25.7	67.5	4.0	10.5
6	10 42 26.41	5.38	0.26	5 35 5.0	64.2	4.0	10.7
7	10 44 28.30	4.78	0.27	5 10 8.8	60.5	4.1	10.9
8	10 46 15.50	4.15	0.28	4 46 44.7	56.5	4.2	11.1
9	10 47 47.39	3.50	0.29	4 25 1.0	52.1	4.3	11.3
10	10 49 3.34	2.82	0.29	4 5 6.1	47.4	4.3	11.5
11	10 50 2.72	2.12	0.29	3 47 9.0	42.3	4.4	11.7
12	10 50 44.87	1.39	0.30	3 31 19.2	36.8	4.5	11.9
13	10 51 9.24	+ 0.64	0.30	3 17 46.1	30.9	4.6	12.1
14	10 51 15.24	- 0.14	0.30	3 6 39.4	24.6	4.6	12.3
15	10 51 2.39	0.93	0.31	2 58 9.0	17.9	4.7	12.5
16	10 50 30.32	1.74	0.32	2 52 24.3	10.8	4.8	12.7
17	10 49 38.79	2.55	0.33	2 49 34.3	- 3.3	4.9	12.9
18	10 48 27.78	3.36	0.33	2 49 47.2	+ 4.5	4.9	13.1
19	10 46 57.47	4.16	0.33	2 53 9.6	12.5	5.0	13.2
20	10 45 8.40	4.93	0.34	2 59 46.6	20.6	5.1	13.4
21	10 43 1.38	5.65	0.34	3 9 41.2	28.9	5.1	13.5
22	10 40 37.64	6.31	0.34	3 22 53.2	37.1	5.1	13.6
23	10 37 58.83	6.90	0.35	3 39 19.0	45.0	5.2	13.7
24	10 35 7.10	7.39	0.35	3 58 51.0	52.6	5.2	13.8
25	10 32 5.02	7.76	0.35	4 21 17.1	59.5	5.2	13.8
26	10 28 55.60	8.00	0.35	4 46 21.6	65.7	5.2	13.8
27	{ 28 55.60 }	{ 8.00 }	{ 0.35 }	{ 4 46 21.6 }	{ 65.7 }	{ 5.2 }	{ 13.8 }
28	10 19 19.60	7.75	0.34	6 13 34.6	77.9	5.1	13.6
29	10 16 18.38	7.32	0.34	6 45 4.1	79.4	5.1	13.4
30	10 13 29.55	6.72	0.33	7 16 52.0	79.5	5.0	13.2
31	10 10 57.17	5.95	0.33	7 48 24.5	78.1	4.9	13.0
Sept. 1	10 8 45.12	- 5.03	0.32	8 19 7.5	+ 75.3	4.8	12.8

MEAN TIME.									
Month and Day.		Geocentric.				Heliocentric.			
		Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
		Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
Sept.	1	h m s	North.	9	h m	o ' "	South.	9	
	10 10 54.23	7 49 3.0	.8195638	23 24.4	350 35 27.8	5 49 13.8	.5611534		
	2	10 8 42.13	8 19 52.3	.8280730	23 18.7	355 12 10.0	5 29 19.8	.5542275	
	3	10 6 54.17	8 49 17.5	.8376159	23 13.4	359 57 30.5	5 6 33.9	.5472886	
	4	10 5 33.39	9 16 47.8	.8480926	23 8.6	4 51 43.8	4 40 52.0	.5403900	
	5	10 4 42.33	9 41 55.5	.8593873	23 4.3	9 54 59.1	4 12 12.1	.5335939	
	6	10 4 22.94	10 4 15.9	.8713775	23 0.6	15 7 21.9	3 40 35.6	.5269687	
	7	10 4 36.57	10 23 28.0	.8839339	22 57.5	20 28 50.9	3 6 7.8	.5205895	
	8	10 5 23.97	10 39 14.5	.8969259	22 54.9	25 59 18.5	2 28 58.5	.5145375	
	9	10 6 45.33	10 51 21.5	.9102225	22 52.8	31 38 28.0	1 49 22.8	.5088980	
	10	10 8 40.30	10 59 38.7	.9236986	22 51.3	37 25 53.9	1 7 41.3	.5037591	
	11	10 11 8.05	11 3 59.2	.9372336	22 50.3	43 21 0.2	0 24 20.7	.4992083	
	12	10 14 7.31	11 4 19.0	.9507151	22 49.8	49 23 0.8	0 20 6.7	.4953285	
	13	10 17 36.43	11 0 37.6	.9640397	22 49.8	55 30 58.9	1 5 3.7	.4921958	
	14	10 21 33.45	10 52 57.0	.9771145	22 50.2	61 43 47.1	1 49 49.2	.4888752	
	15	10 25 56.16	10 41 22.0	.9898580	22 51.0	68 0 9.9	2 33 39.7	.4884164	
	16	10 30 42.20	10 25 59.9	.0022005	22 52.2	74 18 44.0	3 15 51.3	.4878518	
	17	10 35 49.07	10 7 0.2	.0140838	22 53.7	80 38 0.0	3 55 41.8	.4881944	
	18	10 41 14.25	9 44 34.5	.0254621	22 55.4	86 56 28.0	4 32 32.9	.4894361	
	19	10 46 55.24	9 18 55.9	.0363012	22 57.3	93 12 37.3	5 5 51.8	.4915495	
	20	10 52 49.65	8 50 18.4	.0465774	22 59.5	99 25 1.1	5 35 12.7	.4944879	
	21	10 58 55.15	8 18 57.4	.0562780	23 1.8	105 32 19.7	6 0 17.6	.4981912	
	22	11 5 9.67	7 45 8.4	.0653982	23 4.2	111 33 20.8	6 20 56.3	.5025850	
	23	11 11 31.25	7 9 7.1	.0739411	23 6.7	117 27 3.2	6 37 6.5	.5075874	
	24	11 17 58.21	6 31 8.5	.0819169	23 9.3	123 12 35.8	6 48 52.4	.5131121	
	25	11 24 29.01	5 51 28.0	.0893403	23 11.9	128 49 20.6	6 56 24.0	.5190710	
	26	11 31 2.36	5 10 19.4	.0962296	23 14.5	134 16 49.8	6 59 55.5	.5253774	
	27	11 37 37.16	4 27 56.5	.1026059	23 17.2	139 34 46.2	6 59 44.4	.5319495	
	28	11 44 12.51	3 44 31.3	.1084929	23 19.8	144 43 3.1	6 56 10.1	.5387100	
	29	11 50 47.65	3 0 15.2	.1139144	23 22.5	149 41 41.3	6 49 32.9	.5455895	
30	11 57 22.01	2 15 18.7	.1188946	23 25.1	154 30 48.6	6 40 13.1	.5525235		
Oct.	1	12 3 55.10	1 29 51.3	.1234575	23 27.7	159 10 38.2	6 28 30.7	.5594571	
	2	12 10 26.59	0 44 1.2	.1276268	23 30.2	163 41 28.2	6 14 44.3	.5663409	
	3	12 16 56.23	0 2 3.6	.1314247	23 32.8	168 3 39.4	5 59 11.7		

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
North.							
Sept. 1	h m s 10 8 45.12	— 5.03	0.32	° ′ ″ 8 19 7.5	+ 75.3	4.8	12.8
2	10 6 56.91	3.97	0.31	8 48 28.3	71.2	4.7	12.5
3	10 5 35.56	2.79	0.30	9 15 56.4	65.9	4.6	12.2
4	10 4 43.63	1.52	0.30	9 41 4.3	59.5	4.5	11.9
5	10 4 23.11	— 0.18	0.29	10 3 27.4	52.2	4.4	11.5
6	10 4 35.38	+ 1.21	0.28	10 22 44.4	44.1	4.2	11.2
7	10 5 21.22	2.62	0.28	10 38 37.8	35.3	4.1	10.9
8	10 6 40.92	4.02	0.27	10 50 53.5	26.0	4.0	10.6
9	10 8 34.20	5.41	0.27	10 59 20.7	16.3	3.9	10.2
10	10 11 0.27	6.75	0.26	11 3 52.2	+ 6.3	3.7	9.9
11	10 13 57.92	8.04	0.24	11 4 23.6	— 3.7	3.6	9.6
12	10 17 25.57	9.25	0.23	11 0 54.0	13.7	3.5	9.3
13	10 21 21.28	10.38	0.22	10 53 24.8	23.6	3.4	9.1
14	10 25 42.87	11.41	0.22	10 42 1.0	33.3	3.3	8.8
15	10 30 28.00	12.34	0.21	10 26 49.2	42.6	3.2	8.5
16	10 35 34.18	13.16	0.21	10 7 58.7	51.5	3.1	8.3
17	10 40 58.89	13.88	0.21	9 45 40.9	59.9	3.1	8.1
18	10 46 39.62	14.50	0.20	9 20 9.0	67.7	3.0	7.9
19	10 52 33.97	15.02	0.20	8 51 36.7	74.9	2.9	7.7
20	10 58 39.59	15.44	0.19	8 20 19.6	81.4	2.8	7.5
21	11 4 54.38	15.78	0.18	7 46 33.2	87.3	2.8	7.4
22	11 11 16.35	16.04	0.18	7 10 33.2	92.6	2.7	7.2
23	11 17 43.81	16.24	0.18	6 32 34.8	97.2	2.7	7.1
24	11 24 15.19	16.37	0.17	5 52 53.4	101.2	2.6	7.0
25	11 30 49.18	16.45	0.17	5 11 43.2	104.6	2.6	6.9
26	11 37 24.68	16.49	0.17	4 29 17.9	107.5	2.6	6.8
27	11 44 0.76	16.50	0.17	3 45 49.5	109.8	2.5	6.7
28	11 50 36.63	16.48	0.17	3 1 29.9	111.7	2.5	6.6
29	11 57 11.75	16.44	0.17	2 16 29.5	113.2	2.5	6.5
30	12 3 45.59	16.38	0.17	1 30 57.7	114.4	2.5	6.5
Oct. 1	12 10 17.83	16.31	0.16	0 45 3.1	115.1	2.4	6.4
South.							
2	12 16 48.20	16.22	0.16	0 1 6.3	115.6	2.4	6.3
3	12 23 16.52	16.14	0.16	0 47 24.2	115.8	2.4	6.3
4	12 29 42.71	16.05	0.15	1 33 44.0	115.8	2.3	6.2
5	12 36 6.71	15.95	0.15	2 20 0.5	115.5	2.3	6.2
6	12 42 28.54	15.86	0.15	3 6 8.8	115.1	2.3	6.2
7	12 48 48.23	15.78	0.15	3 52 4.8	114.5	2.3	6.1
8	12 55 5.85	+ 15.69	0.15	4 37 44.3	— 113.8	2.3	6.1
9	* * *	*	*	* * *	*	*	*

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
<div> <div> <div>h m s</div> <div>° ' "</div> </div> <div> <div>South.</div> <div>° ' "</div> </div> <div> <div>°</div> </div> <div> <div>h m</div> <div>° ' "</div> </div> <div> <div>North.</div> <div>° ' "</div> </div> <div> <div>9</div> </div> </div>							
Oct. 9	12 55 9.81	4 38 13.0	.1475187	23 47.1	191 38 9.64	1 59.3	.6103421
10	13 1 24.84	5 23 28.3	.1492406	23 49.4	195 11 26.43	40 10.4	.6157733
11	13 7 38.02	6 8 20.9	.1507249	23 51.7	198 39 24.03	18 4.2	.6209537
12	13 13 49.49	6 52 48.1	.1519819	23 53.9	202 2 25.52	55 46.7	.6258771
13	13 19 59.37	7 36 47.4	.1530217	23 56.1	205 20 53.22	33 22.8	.6305386
14	13 26 7.81	8 20 16.7	.1538530	23 58.3	208 35 8.32	10 57.0	.6349352
15	13 32 14.95	9 3 13.8	.1544835	* *	211 45 31.01	48 33.0	.6390649
16	13 38 20.95	9 45 36.9	.1549198	0 0.5	214 52 21.21	26 14.0	.6429261
17	13 44 25.95	10 27 24.2	.1551684	0 2.6	217 55 56.81	4 3.0	.6465188
18	13 50 30.11	11 8 34.2	.1552339	0 4.7	220 56 35.40	42 2.4	.6498428
19	13 56 33.55	11 49 5.3	.1551209	0 6.8	223 54 34.70	20 14.1	.6528982
South.							
20	14 2 36.41	12 28 55.8	.1548334	0 8.9	226 50 10.20	1 19.9	.6556861
21	14 8 38.84	13 8 4.7	.1543737	0 11.0	229 43 38.00	22 38.1	.6582068
22	14 14 40.95	13 46 30.5	.1537445	0 13.1	232 35 12.60	43 38.8	.6604616
23	14 20 42.88	14 24 12.0	.1529473	0 15.2	235 25 9.11	4 20.9	.6624512
24	14 26 44.72	15 1 7.6	.1519838	0 17.3	238 13 40.61	24 43.0	.6641773
25	14 32 46.58	15 37 16.4	.1508540	0 19.4	241 1 12.14	44 44.2	.6656401
26	14 38 48.56	16 12 37.0	.1495581	0 21.5	243 47 24.02	4 23.2	.6668409
27	14 44 50.72	16 47 8.2	.1480957	0 23.6	246 33 1.62	23 39.1	.6677800
28	14 50 53.16	17 20 48.6	.1464657	0 25.7	249 18 6.82	42 30.9	.6684584
29	14 56 55.93	17 53 37.1	.1446664	0 27.8	252 2 52.73	0 57.5	.6688764
30	15 2 59.07	18 25 32.2	.1426961	0 29.9	254 47 30.63	18 57.8	.6690343
31	15 9 2.59	18 56 33.0	.1405526	0 32.1	257 32 12.93	36 30.5	.6689323
Nov. 1	15 15 6.55	19 26 37.8	.1382321	0 34.2	260 17 12.43	53 34.6	.6685701
2	15 21 10.92	19 55 45.4	.1357315	0 36.3	263 2 40.84	10 8.7	.6679477
3	15 27 13.69	20 23 54.4	.1330467	0 38.5	265 48 50.44	26 11.4	.6670645
4	15 33 20.81	20 51 3.5	.1301729	0 40.6	268 35 54.04	41 41.1	.6659198
5	15 39 26.24	21 17 11.2	.1271046	0 42.8	271 24 4.44	56 36.3	.6645134
6	15 45 31.88	21 42 16.0	.1238371	0 44.9	274 13 33.45	10 54.9	.6628440
7	15 51 37.62	22 6 16.5	.1203633	0 47.1	277 4 34.85	24 35.0	.6609110
8	15 57 43.32	22 29 11.1	.1166758	0 49.2	279 57 22.05	37 34.4	.6587131
9	16 3 48.81	22 50 58.4	.1127680	0 51.4	282 52 8.75	49 50.4	.6562496
10	16 9 53.85	23 11 36.8	.1086308	0 53.5	285 49 8.96	1 20.4	.6535190
11	16 15 58.22	23 31 4.6	.1042559	0 55.7	288 48 37.96	12 1.3	.6505214
12	16 22 1.60	23 49 20.1	.0996330	0 57.8	291 50 49.96	21 49.8	.6472550
13	16 28 3.63	24 6 21.9	.0947520	0 59.9	294 56 1.36	30 42.2	.6437202
14	16 34 3.91	24 22 8.4	.0896017	1 1.9	298 4 28.66	38 34.5	.6399163
15	16 40 1.95	24 36 37.7	.0841706	1 3.9	301 16 28.46	45 22.2	.6358441
16	16 45 57.19	24 49 48.5	.0784461	1 5.9	304 32 18.46	51 0.5	.6315045
17	16 51 49.01	25 1 39.1	.0724151	1 7.8	307 52 17.36	55 24.0	.6268996
18	16 57 36.67	25 12 8.1	.0660640	1 9.7	311 16 44.36	58 27.1	.6220327
19	17 3 19.31	25 21 13.9	.0593789	1 11.4	314 45 58.67	0 3.4	.6169069
20	17 8 55.99	25 28 55.2	.0523458	1 13.1	318 20 21.17	0 6.2	.6115289

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Std. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	h m s	s	s	South. ° ' "	"	"	"
Oct. 9	* * *	*	*	* * *	*	*	*
10	13 1 21.50	+15.61	0.15	5 23 4.2	-112.9	2.3	6.1
11	13 7 35.29	15.54	0.15	6 8 1.2	111.9	2.3	6.1
12	13 13 47.35	15.47	0.15	6 52 32.8	110.7	2.3	6.0
13	13 19 57.81	15.40	0.15	7 36 36.3	109.5	2.3	6.0
14	13 26 6.82	15.35	0.15	8 20 9.7	108.2	2.3	6.0
15	13 32 14.52	15.30	0.15	9 3 10.8	106.8	2.3	6.0
16	13 38 21.06	15.25	0.15	9 45 37.7	105.4	2.3	6.0
17	13 44 26.60	15.21	0.15	10 27 28.6	103.9	2.3	6.0
18	13 50 31.30	15.18	0.15	11 8 42.3	102.3	2.3	6.0
19	13 56 35.27	15.15	0.15	11 49 16.8	100.6	2.3	6.0
20	14 2 38.66	15.13	0.15	12 29 10.5	98.9	2.3	6.0
21	14 8 41.62	15.12	0.16	13 8 22.6	97.1	2.3	6.0
22	14 14 44.26	15.11	0.16	13 46 51.3	95.3	2.3	6.0
23	14 20 46.71	15.10	0.16	14 24 35.6	93.4	2.3	6.0
24	14 26 49.08	15.10	0.16	15 1 34.0	91.5	2.3	6.0
25	14 32 51.46	15.10	0.16	15 37 45.3	89.5	2.3	6.1
26	14 38 53.97	15.11	0.16	16 13 8.3	87.4	2.3	6.1
27	14 44 56.66	15.12	0.16	16 47 41.7	85.3	2.3	6.1
28	14 50 59.64	15.13	0.16	17 21 24.2	83.2	2.3	6.1
29	14 57 2.95	15.15	0.16	17 54 14.6	81.0	2.3	6.1
30	15 3 6.63	15.16	0.16	18 26 11.5	78.7	2.3	6.2
31	15 9 10.69	15.18	0.16	18 57 13.8	76.4	2.3	6.2
Nov. 1	15 15 15.20	15.20	0.16	19 27 20.0	74.1	2.3	6.2
2	15 21 20.12	15.21	0.17	19 56 28.7	71.7	2.4	6.3
3	15 27 25.44	15.23	0.17	20 24 38.7	69.2	2.4	6.3
4	15 33 31.11	15.24	0.17	20 51 48.5	66.6	2.4	6.4
5	15 39 37.09	15.25	0.17	21 17 56.8	64.0	2.4	6.4
6	15 45 43.28	15.26	0.18	21 43 1.8	61.4	2.5	6.5
7	15 51 49.57	15.26	0.18	22 7 2.4	58.7	2.5	6.5
8	15 57 55.81	15.26	0.18	22 29 56.9	55.9	2.5	6.6
9	16 4 1.84	15.25	0.18	22 51 43.8	53.0	2.5	6.6
10	16 10 7.40	15.22	0.18	23 12 21.5	50.1	2.5	6.7
11	16 16 12.28	15.18	0.18	23 31 48.3	47.1	2.5	6.7
12	16 22 16.15	15.13	0.19	23 50 2.6	44.1	2.6	6.8
13	16 28 18.65	15.07	0.19	24 7 2.8	40.9	2.6	6.9
14	16 34 19.36	14.99	0.19	24 22 47.4	37.7	2.6	7.0
15	16 40 17.80	14.88	0.20	24 37 14.5	34.5	2.7	7.1
16	16 46 13.38	14.75	0.20	24 50 22.8	31.2	2.7	7.2
17	16 52 5.49	14.59	0.20	25 2 10.5	27.8	2.8	7.3
18	16 57 53.38	14.40	0.20	25 12 36.4	24.3	2.8	7.4
19	17 3 36.18	14.16	0.20	25 21 38.8	20.8	2.8	7.5
20	17 9 12.92	13.89	0.21	25 29 16.4	17.3	2.9	7.6
21	17 14 42.47	+13.57	0.21	25 35 28.0	-13.7	2.9	7.7

MEAN TIME.								
Month and Day.	Geocentric.				Heliocentric.			
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
	h m s	South. ° ' "	o	h m	° ' "	South. ° ' "	9	
Nov. 21	17 14 25.59	25 35 10.8	0.0449499	1 14.7	322 0 13.0	6 58 28.3	6059061	
22	17 19 46.89	25 39 59.5	0.0371775	1 16.1	325 45 56.0	6 55 2.1	6000485	
23	17 24 58.44	25 43 20.3	0.0290161	1 17.3	329 37 51.9	6 49 39.3	5939690	
24	17 29 58.66	25 45 12.5	0.0204534	1 18.4	333 36 23.7	6 42 11.7	5876839	
25	17 34 45.70	25 45 35.3	0.0114804	1 19.2	337 41 53.5	6 32 30.6	5812116	
26	17 39 17.53	25 44 28.6	0.0020906	1 19.8	341 54 44.0	6 20 27.2	5745763	
			9					
27	17 43 31.84	25 41 52.3	0.9922826	1 20.0	346 15 16.5	6 5 53.1	5678081	
28	17 47 26.11	25 37 46.4	0.9820604	1 20.0	350 43 52.2	5 48 40.1	5609404	
29	17 50 57.49	25 32 11.1	0.9714371	1 19.5	355 20 50.1	5 28 41.0	5540133	
30	17 54 2.89	25 25 7.4	0.9604363	1 18.6	0 6 26.9	5 5 49.9	5470748	
Dec. 1	17 56 39.00	25 16 35.9	0.9490960	1 17.3	5 0 56.2	4 40 2.6	5401794	
2	17 58 42.29	25 6 37.3	0.9374705	1 15.4	10 4 28.4	4 11 17.2	5333874	
3	18 0 9.12	24 55 12.9	0.9256366	1 12.8	15 17 8.0	3 39 35.4	5267686	
4	18 0 55.89	24 42 23.5	0.9136957	1 9.6	20 38 54.0	3 5 2.5	5203982	
5	18 0 59.18	24 28 10.1	0.9017786	1 5.7	26 9 38.4	2 27 48.5	5143573	
6	18 0 16.11	24 12 33.7	0.8900496	1 1.0	31 49 3.4	1 48 8.6	5087320	
7	17 58 44.57	23 55 36.0	0.8787063	0 55.6	37 36 43.5	1 6 23.8	5036108	
8	17 56 23.59	23 37 18.9	0.8679771	0 49.3	43 32 3.7	0 23 0.6	4990790	
						North.		
9	17 53 13.86	23 17 46.5	0.8581181	0 42.2	49 34 16.3	0 21 28.3	4952213	
10	17 49 18.03	22 57 5.0	0.8494009	0 34.3	55 42 24.5	1 6 25.6	4921129	
11	17 44 41.06	22 35 25.5	0.8420955	0 25.8	61 55 20.8	1 51 10.2	4898182	
12	17 39 30.13	22 13 3.4	0.8364491	0 16.8	68 11 49.5	2 34 58.4	4883866	
13	17 33 54.67	21 50 21.0	0.8326656	0 7.3	74 30 26.1	3 17 6.3	4878500	
14	17 28 5.59	21 27 45.8	0.8308805	23 47.9	80 49 42.0	3 56 51.9	4882204	
15	17 22 14.68	21 5 50.6	0.8311478	23 38.3	87 8 7.4	4 33 37.0	4894894	
16	17 16 33.69	20 45 10.1	0.8334334	23 29.1	93 24 11.3	5 6 49.0	4916289	
17	17 11 13.35	20 26 18.5	0.8376205	23 20.4	99 36 27.7	5 36 2.3	4945919	
18	17 6 22.75	20 9 45.7	0.8435217	23 12.2	105 43 36.3	6 0 59.2	4983179	
19	17 2 8.91	19 55 55.2	0.8509043	23 4.7	111 44 25.2	6 21 29.9	5027314	
20	16 58 36.60	19 45 2.5	0.8595079	22 58.0	117 37 52.8	6 37 31.9	5077511	
21	16 55 48.41	19 37 14.9	0.8690705	22 52.0	123 23 10.5	6 49 9.9	5132902	
22	16 53 45.21	19 32 31.4	0.8793399	22 46.7	128 59 38.9	6 56 33.9	5192609	
23	16 52 26.35	19 30 45.1	0.8900889	22 42.1	134 26 50.9	6 59 58.4	5255767	
24	16 51 50.17	19 31 43.8	0.9011202	22 38.2	139 44 30.6	6 59 40.8	5321559	
25	16 51 54.28	19 35 12.1	0.9122682	22 35.0	144 52 30.2	6 56 0.6	5389211	
26	16 52 35.87	19 40 52.7	0.9233980	22 32.3	149 50 51.2	6 49 18.1	5458208	
27	16 53 51.99	19 48 27.2	0.9344030	22 30.1	154 39 41.3	6 39 53.7	5527370	
28	16 55 39.59	19 57 37.5	0.9452019	22 28.4	159 19 14.7	6 28 7.2	5596697	
29	16 57 55.79	20 8 6.2	0.9557345	22 27.1	163 49 48.9	6 14 17.3	5665514	
30	17 0 37.87	20 19 36.9	0.9659576	22 26.2	168 11 45.1	5 58 41.6	5733411	
31	17 3 43.27	20 31 54.1	0.9758415	22 25.7	172 25 26.5	5 41 36.2	5800028	
32	17 7 9.67	20 44 44.1	0.9853684	22 25.5	176 31 18.0	5 23 15.7	5865066	

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	h m s	s	s	South. ° ' "	"	"	"
Nov. 21	17 14 42.47	+13.57	0.21	25 35 28.0	-13.7	2.9	7.7
22	17 20 3.60	13.19	0.22	25 40 12.3	10.0	3.0	7.9
23	17 25 14.85	12.74	0.22	25 43 28.6	6.3	3.0	8.0
24	17 30 14.63	12.23	0.23	25 45 16.0	-2.6	3.1	8.2
25	17 35 1.07	11.63	0.23	25 45 33.9	+1.1	3.2	8.4
26	17 39 32.11	10.94	0.23	25 44 22.3	4.9	3.2	8.5
27	17 43 45.41	10.15	0.24	25 41 41.0	8.6	3.3	8.7
28	17 47 38.48	9.25	0.25	25 37 30.2	12.3	3.4	8.9
29	17 51 8.45	8.23	0.26	25 31 50.0	16.0	3.5	9.2
30	17 54 12.22	7.07	0.26	25 24 41.8	19.7	3.5	9.4
Dec. 1	17 56 46.50	5.77	0.27	25 16 6.0	23.3	3.7	9.7
2	17 58 47.78	4.32	0.27	25 6 3.7	26.9	3.7	9.9
3	18 0 12.48	2.72	0.28	24 54 36.1	30.4	3.8	10.2
4	18 0 57.07	+0.97	0.29	24 41 44.1	33.9	4.0	10.5
5	18 0 58.23	-0.90	0.30	24 27 29.2	37.3	4.1	10.8
6	18 0 13.22	2.87	0.31	24 11 52.2	40.7	4.2	11.1
7	17 58 40.04	4.90	0.32	23 54 55.1	44.0	4.3	11.4
8	17 56 17.87	6.94	0.32	23 36 40.0	47.2	4.4	11.6
9	17 53 7.56	8.90	0.33	23 17 11.0	50.2	4.5	11.9
10	17 49 11.86	10.70	0.33	22 56 34.6	52.8	4.6	12.1
11	17 44 35.75	12.25	0.33	22 35 1.7	54.9	4.6	12.3
12	17 39 26.34	13.46	0.34	22 12 47.5	56.2	4.7	12.5
13	17 33 52.91	14.25	0.34	21 50 14.1	56.4	4.8	12.6
14	{17 28 19.44}	{14.42}	{0.34}	{21 28 41.1}	{56.1}	{4.8}	{12.7}
15	17 16 38.72	13.77	0.34	20 45 28.1	49.4	4.8	12.6
16	17 11 19.97	12.73	0.33	20 26 41.5	44.3	4.7	12.5
17	17 6 30.30	11.36	0.32	20 10 11.0	38.1	4.6	12.3
18	17 2 16.71	9.74	0.32	19 56 20.0	31.1	4.6	12.1
19	16 58 43.95	7.97	0.32	19 45 24.1	23.6	4.5	11.9
20	16 55 54.74	6.12	0.31	19 37 31.1	15.9	4.4	11.6
21	16 53 50.05	4.27	0.30	19 32 40.7	8.4	4.3	11.3
22	16 52 29.33	2.47	0.29	19 30 46.4	+1.3	4.2	11.1
23	16 51 51.07	-0.74	0.29	19 31 36.6	-5.3	4.1	10.8
24	16 51 53.00	+0.88	0.28	19 34 56.6	11.2	4.0	10.5
25	16 52 32.40	2.38	0.27	19 40 29.2	16.4	3.9	10.3
26	16 53 46.40	3.76	0.27	19 47 56.5	20.8	3.8	10.0
27	16 55 31.99	5.02	0.26	19 57 0.6	24.4	3.7	9.7
28	16 57 46.32	6.16	0.25	20 7 24.1	27.4	3.6	9.5
29	17 0 26.68	7.19	0.25	20 18 50.7	29.7	3.5	9.3
30	17 3 30.53	8.12	0.24	20 31 4.9	31.4	3.4	9.1
31	17 6 55.55	8.95	0.24	20 43 52.9	32.5	3.4	8.9
32	17 10 39.62	+9.71	0.24	20 57 2.0	-33.2	3.3	8.7

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
<div> <div> <div>South.</div> <div>9</div> </div> <div> <div>North.</div> <div>9</div> </div> </div>							
Jan. 1	16 54 33.46	17 56 33.0	.4929538	22 8.3	111 36 33.2	2 0 18.9	.8565240
2	16 54 20.89	17 49 54.4	.4995779	22 4.3	113 13 53.7	2 4 55.0	.8564998
3	16 54 18.34	17 44 6.0	.5063342	22 0.5	114 51 15.4	2 9 25.1	.8564779
4	16 54 25.65	17 39 6.6	.5132041	21 56.8	116 28 38.2	2 13 49.1	.8564582
5	16 54 42.65	17 34 55.1	.5201703	21 53.3	118 6 2.1	2 18 6.6	.8564409
6	16 55 9.15	17 31 29.7	.5272164	21 50.0	119 43 27.0	2 22 17.5	.8564258
7	16 55 44.92	17 28 48.7	.5343277	21 46.8	121 20 52.9	2 26 21.6	.8564130
8	16 56 29.75	17 26 50.2	.5414902	21 43.7	122 58 19.6	2 30 18.6	.8564026
9	16 57 23.44	17 25 32.3	.5486915	21 40.8	124 35 47.1	2 34 8.4	.8563946
10	16 58 25.76	17 24 53.0	.5559204	21 38.0	126 13 15.4	2 37 50.8	.8563889
11	16 59 36.45	17 24 50.2	.5631667	21 35.4	127 50 44.4	2 41 25.6	.8563855
12	17 0 55.28	17 25 21.6	.5704205	21 32.9	129 28 14.0	2 44 52.6	.8563845
13	17 2 22.01	17 26 25.1	.5776730	21 30.5	131 5 44.2	2 48 11.6	.8563858
14	17 3 56.41	17 27 58.4	.5849164	21 28.2	132 43 14.8	2 51 22.6	.8563895
15	17 5 38.25	17 29 59.2	.5921436	21 26.1	134 20 45.8	2 54 25.3	.8563955
16	17 7 27.31	17 32 25.4	.5993478	21 24.1	135 58 17.1	2 57 19.6	.8564039
17	17 9 23.34	17 35 14.7	.6065228	21 22.2	137 35 48.7	3 0 5.3	.8564147
18	17 11 26.15	17 38 24.8	.6136633	21 20.4	139 13 20.4	3 2 42.3	.8564277
19	17 13 35.52	17 41 53.5	.6207649	21 18.7	140 50 52.2	3 5 10.6	.8564431
20	17 15 51.22	17 45 38.7	.6278230	21 17.1	142 28 23.9	3 7 29.9	.8564608
21	17 18 13.05	17 49 38.3	.6348336	21 15.6	144 5 55.6	3 9 40.1	.8564807
22	17 20 40.80	17 53 50.1	.6417931	21 14.2	145 43 27.1	3 11 41.2	.8565030
23	17 23 14.27	17 58 12.1	.6486986	21 12.9	147 20 58.3	3 13 33.0	.8565275
24	17 25 53.25	18 2 42.4	.6555475	21 11.7	148 58 29.2	3 15 15.5	.8565542
25	17 28 37.56	18 7 18.9	.6623375	21 10.6	150 35 59.7	3 16 48.6	.8565832
26	17 31 27.00	18 11 59.8	.6690665	21 9.5	152 13 29.6	3 18 12.2	.8566143
27	17 34 21.39	18 16 43.2	.6757330	21 8.5	153 50 58.9	3 19 26.3	.8566476
28	17 37 20.54	18 21 27.5	.6823357	21 7.7	155 28 27.5	3 20 30.7	.8566830
29	17 40 34.28	18 26 10.9	.6888736	21 6.9	157 5 55.3	3 21 25.5	.8567205
30	17 43 22.44	18 30 51.8	.6953459	21 6.1	158 43 22.3	3 22 10.6	.8567601
31	17 46 44.84	18 35 28.6	.7017520	21 5.4	160 20 48.3	3 22 45.9	.8568017
Feb. 1	17 50 1.33	18 39 59.8	.7080917	21 4.8	161 58 13.3	3 23 11.5	.8568453
2	17 53 21.74	18 44 24.0	.7143649	21 4.3	163 35 37.1	3 23 27.3	.8568909
3	17 56 45.94	18 48 39.7	.7205715	21 3.8	165 12 59.7	3 23 33.4	.8569384
4	18 0 13.78	18 52 45.7	.7267119	21 3.4	166 50 21.0	3 23 29.7	.8569878
5	18 3 45.12	18 56 40.6	.7327863	21 3.0	168 27 40.9	3 23 16.2	.8570390
6	18 7 19.82	19 0 23.2	.7387951	21 2.7	170 4 59.4	3 22 53.0	.8570921
7	18 10 57.77	19 3 52.3	.7447388	21 2.4	171 42 16.3	3 22 20.0	.8571469
8	18 14 38.83	19 7 6.8	.7506181	21 2.2	173 19 31.6	3 21 37.4	.8572034
9	18 18 22.90	19 10 5.6	.7564335	21 2.0	174 56 45.2	3 20 45.1	.8572616
10	18 22 9.85	19 12 47.6	.7621856	21 1.9	176 33 57.0	3 19 43.2	.8573215
11	18 25 59.57	19 15 11.8	.7678750	21 1.8	178 11 6.9	3 18 31.8	.8573829

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
				<i>South.</i>			
	^h ^m ^s	^s	^s	^o ['] ["]	["]	["]	["]
Jan. 1	16 54 21.51	— 0.35	1.84	17 50 23.5	+ 15.7	26.2	27.2
2	16 54 18.18	+ 0.07	1.80	17 44 32.2	13.6	25.8	26.8
3	16 54 24.67	0.47	1.77	17 39 29.6	11.6	25.3	26.3
4	16 54 40.82	0.87	1.74	17 35 14.8	9.7	24.9	25.9
5	16 55 6.44	1.26	1.71	17 31 46.0	7.8	24.5	25.5
6	16 55 41.31	1.64	1.68	17 29 1.5	6.0	24.1	25.1
7	16 56 25.23	2.01	1.65	17 26 59.4	4.2	23.8	24.7
8	16 57 18.00	2.38	1.62	17 25 38.0	2.6	23.4	24.3
9	16 58 19.37	2.73	1.60	17 24 55.2	+ 1.0	23.0	23.9
10	16 59 29.11	3.08	1.57	17 24 48.9	— 0.5	22.6	23.5
11	17 0 47.00	3.41	1.54	17 25 17.0	1.9	22.2	23.1
12	17 2 12.79	3.73	1.52	17 26 17.2	3.1	21.8	22.7
13	17 3 46.26	4.05	1.50	17 27 47.4	4.3	21.5	22.3
14	17 5 27.17	4.36	1.48	17 29 45.2	5.4	21.2	22.0
15	17 7 15.32	4.66	1.46	17 32 8.6	6.4	20.8	21.6
16	17 9 10.44	4.94	1.44	17 34 55.3	7.4	20.5	21.3
17	17 11 12.36	5.22	1.41	17 38 3.0	8.3	20.1	20.9
18	17 13 20.86	5.49	1.39	17 41 29.5	9.0	19.8	20.6
19	17 15 35.71	5.75	1.36	17 45 12.7	9.6	19.4	20.2
20	17 17 56.70	6.00	1.34	17 49 10.5	10.2	19.1	19.9
21	17 20 23.64	6.24	1.32	17 53 20.8	10.7	18.9	19.6
22	17 22 56.31	6.47	1.30	17 57 41.5	11.1	18.6	19.3
23	17 25 34.53	6.70	1.29	18 2 10.6	11.4	18.3	19.0
24	17 28 18.09	6.92	1.27	18 6 46.3	11.6	18.0	18.7
25	17 31 6.80	7.13	1.24	18 11 26.6	11.7	17.7	18.4
26	17 34 0.49	7.33	1.22	18 16 9.6	11.8	17.4	18.1
27	17 36 58.97	7.53	1.20	18 20 53.7	11.8	17.1	17.8
28	17 40 2.06	7.72	1.19	18 25 37.1	11.7	16.9	17.6
29	17 43 9.59	7.90	1.18	18 30 18.2	11.6	16.6	17.3
30	17 46 21.38	8.08	1.17	18 34 55.4	11.4	16.5	17.1
31	17 49 37.29	8.25	1.15	18 39 27.3	11.2	16.2	16.8
Feb. 1	17 52 57.16	8.41	1.13	18 43 52.3	10.9	16.0	16.6
2	17 56 20.82	8.56	1.11	18 48 9.0	10.5	15.7	16.3
3	17 59 48.15	8.71	1.10	18 52 16.1	10.1	15.5	16.1
4	18 3 19.01	8.86	1.08	18 56 12.4	9.6	15.3	15.9
5	18 6 53.25	9.00	1.06	18 59 56.5	9.1	15.1	15.7
6	18 10 30.76	9.13	1.04	19 3 27.3	8.5	14.9	15.5
7	18 14 11.41	9.26	1.03	19 6 43.6	7.9	14.7	15.3
8	18 17 55.08	9.38	1.02	19 9 44.4	7.2	14.5	15.1
9	18 21 41.65	9.50	1.00	19 12 28.5	6.5	14.3	14.9
10	18 25 31.02	9.61	0.99	19 14 55.0	5.7	14.1	14.7
11	18 29 23.07	+ 9.72	0.98	19 17 2.8	— 4.9	13.9	14.5

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>South.</i>	<i>9</i>	<i>h m</i>	<i>° ' "</i>	<i>North.</i>	<i>9</i>
Feb. 11	18 25 59.57	19 15 11.8	7678750	21 1.8	178 11 6.9	3 18 31.8	8573829
12	18 29 51.96	19 17 17.3	7735026	21 1.8	179 48 14.9	3 17 10.9	8574458
13	18 33 46.92	19 19 3.1	7790688	21 1.8	181 25 20.9	3 15 40.7	8575102
14	18 37 44.34	19 20 28.4	7845742	21 1.9	183 2 24.9	3 14 1.1	8575760
15	18 41 44.12	19 21 32.1	7900193	21 2.0	184 39 26.8	3 12 12.3	8576432
16	18 45 46.17	19 22 13.5	7954048	21 2.1	186 16 26.5	3 10 14.4	8577117
17	18 49 50.40	19 22 31.8	8007311	21 2.3	187 53 23.9	3 8 7.4	8577814
18	18 53 56.69	19 22 26.3	8059989	21 2.5	189 30 19.1	3 5 51.6	8578524
19	18 58 4.97	19 21 56.4	8112087	21 2.7	191 7 11.9	3 3 27.0	8579245
20	19 2 15.13	19 21 1.4	8163611	21 2.9	192 44 2.3	3 0 53.6	8579977
21	19 6 27.09	19 19 40.7	8214565	21 3.2	194 20 50.2	2 58 11.8	8580719
22	19 10 40.75	19 17 53.6	8264954	21 3.5	195 57 35.7	2 55 21.5	8581470
23	19 14 56.01	19 15 39.8	8314786	21 3.8	197 34 18.7	2 52 23.0	8582231
24	19 19 12.79	19 12 58.6	8364064	21 4.2	199 10 59.1	2 49 16.3	8583000
25	19 23 31.00	19 9 49.7	8412795	21 4.6	200 47 36.9	2 46 1.7	8583777
26	19 27 50.55	19 6 12.7	8460986	21 5.0	202 24 12.1	2 42 39.3	8584562
27	19 32 11.35	19 2 7.3	8508644	21 5.4	204 0 44.6	2 39 9.3	8585353
28	19 36 33.31	18 57 33.2	8555775	21 5.8	205 37 14.5	2 35 31.9	8586150
Mar. 1	19 40 56.35	18 52 30.2	8602386	21 6.3	207 13 41.7	2 31 47.2	8586952
2	19 45 20.38	18 46 58.0	8648485	21 6.8	208 50 6.2	2 27 55.4	8587759
3	19 49 45.33	18 40 56.5	8694080	21 7.3	210 26 27.9	2 23 56.7	8588570
4	19 54 11.11	18 34 25.5	8739178	21 7.8	212 2 46.9	2 19 51.4	8589385
5	19 58 37.65	18 27 24.9	8783788	21 8.3	213 39 3.2	2 15 39.5	8590202
6	20 3 4.88	18 19 54.7	8827918	21 8.8	215 15 16.7	2 11 21.4	8591021
7	20 7 32.73	18 11 54.9	8871577	21 9.3	216 51 27.5	2 6 57.3	8591842
8	20 12 1.14	18 3 25.4	8914773	21 9.8	218 27 35.6	2 2 27.3	8592664
9	20 16 30.04	17 54 26.3	8957513	21 10.4	220 3 40.9	1 57 51.7	8593486
10	20 20 59.37	17 44 57.5	8999806	21 11.0	221 39 43.5	1 53 10.6	8594308
11	20 25 29.09	17 34 59.2	9041658	21 11.5	223 15 43.4	1 48 24.4	8595128
12	20 29 59.14	17 24 31.4	9083077	21 12.1	224 51 40.6	1 43 33.2	8595947
13	20 34 29.47	17 13 34.2	9124071	21 12.6	226 27 35.2	1 38 37.3	8596763
14	20 39 0.03	17 2 7.7	9164645	21 13.2	228 3 27.1	1 33 36.9	8597577
15	20 43 30.77	16 50 12.2	9204807	21 13.8	229 39 16.4	1 28 32.3	8598386
16	20 48 1.66	16 37 47.7	9244564	21 14.4	231 15 3.2	1 23 23.7	8599192
17	20 52 32.65	16 24 54.5	9283919	21 14.9	232 50 47.4	1 18 11.3	8599993
18	20 57 3.71	16 11 32.8	9322877	21 15.5	234 26 29.1	1 12 55.3	8600788
19	21 1 34.78	15 57 42.9	9361443	21 16.1	236 2 8.3	1 7 36.1	8601577
20	21 6 5.84	15 43 25.0	9399619	21 16.7	237 37 45.1	1 2 13.9	8602359
21	21 10 36.86	15 28 39.4	9437411	21 17.2	239 13 19.6	0 56 48.8	8603134
22	21 15 7.80	15 13 26.4	9474823	21 17.8	240 48 51.7	0 51 21.3	8603902
23	21 19 38.62	14 57 46.4	9511857	21 18.4	242 24 21.6	0 45 51.5	8604661
24	21 24 9.30	14 41 39.8	9548519	21 18.9	243 59 49.2	0 40 19.7	8605411

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				<i>South.</i>			
Feb. 11	^h 18 ^m 29 ^s 23·07	+ 9·72	0·98	° 19 17 2·8	- 4·9	13·9	14·5
12	18 33 17·71	9·83	0·97	19 18 51·1	4·1	13·8	14·3
13	18 37 14·83	9·93	0·96	19 20 19·0	3·2	13·6	14·1
14	18 41 14·34	10·03	0·94	19 21 25·4	2·3	13·4	13·9
15	18 45 16·13	10·12	0·93	19 22 9·6	1·4	13·2	13·7
16	18 49 20·11	10·21	0·92	19 22 30·8	- 0·4	13·1	13·6
17	18 53 26·18	10·29	0·91	19 22 28·3	+ 0·6	12·9	13·4
18	18 57 34·25	10·37	0·90	19 22 1·4	1·6	12·8	13·3
19	19 1 44·23	10·45	0·89	19 21 9·5	2·7	12·6	13·1
20	19 5 56·01	10·53	0·88	19 19 52·0	3·8	12·5	13·0
21	19 10 9·51	10·60	0·86	19 18 8·2	4·9	12·3	12·8
22	19 14 24·64	10·66	0·85	19 15 57·7	6·0	12·2	12·7
23	19 18 41·30	10·72	0·84	19 13 19·8	7·2	12·0	12·5
24	19 22 59·41	10·78	0·83	19 10 14·3	8·3	11·9	12·4
25	19 27 18·86	10·84	0·82	19 6 40·7	9·5	11·7	12·2
26	19 31 39·58	10·89	0·81	19 2 38·7	10·7	11·6	12·1
27	19 36 1·49	10·94	0·80	18 58 8·0	11·9	11·5	12·0
28	19 40 24·48	10·98	0·80	18 53 8·4	13·1	11·4	11·8
Mar. 1	19 44 48·48	11·02	0·79	18 47 39·6	14·3	11·3	11·7
2	19 49 13·41	11·06	0·78	18 41 41·5	15·5	11·2	11·6
3	19 53 39·18	11·09	0·77	18 35 14·0	16·7	11·0	11·4
4	19 58 5·73	11·12	0·76	18 28 16·8	17·9	10·9	11·3
5	20 2 32·97	11·15	0·76	18 20 50·0	19·2	10·8	11·2
6	20 7 0·85	11·17	0·75	18 12 53·5	20·4	10·7	11·1
7	20 11 29·29	11·19	0·75	18 4 27·4	21·7	10·6	11·0
8	20 15 58·24	11·21	0·74	17 55 31·5	22·9	10·5	10·9
9	20 20 27·63	11·23	0·73	17 46 6·1	24·2	10·4	10·8
10	20 24 57·41	11·25	0·72	17 36 11·0	25·4	10·3	10·7
11	20 29 27·53	11·26	0·71	17 25 46·4	26·7	10·2	10·6
12	20 33 57·93	11·27	0·70	17 14 52·3	27·9	10·1	10·5
13	20 38 28·57	11·28	0·70	17 3 29·0	29·1	10·0	10·4
14	20 42 59·40	11·29	0·69	16 51 36·5	30·3	9·9	10·3
15	20 47 30·39	11·29	0·68	16 39 15·1	31·5	9·8	10·2
16	20 52 1·48	11·30	0·67	16 26 24·9	32·7	9·7	10·1
17	20 56 32·63	11·30	0·66	16 13 6·2	33·9	9·6	10·0
18	21 1 3·81	11·30	0·65	15 59 19·1	35·0	9·5	9·9
19	21 5 34·99	11·30	0·65	15 45 4·0	36·2	9·4	9·8
20	21 10 6·12	11·29	0·64	15 30 21·2	37·3	9·3	9·7
21	21 14 37·18	11·29	0·64	15 15 10·9	38·5	9·3	9·7
22	21 19 8·12	11·28	0·63	14 59 33·6	39·6	9·2	9·6
23	21 23 38·93	11·28	0·63	14 43 29·6	40·7	9·1	9·5
24	21 28 9·57	+ 11·27	0·63	14 26 59·3	+ 41·8	9·0	9·4

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>South.</i> <i>° ' "</i>	<i>9</i>	<i>h m</i>	<i>° ' "</i>	<i>North.</i> <i>° ' "</i>	<i>9</i>
Mar. 24	21 24 9.30	14 41 39.8	.9548519	21 18.9	243 59 49.2	0 40 19.7	.8605411
25	21 28 39.82	14 25 6.9	.9584811	21 19.5	245 35 14.6	0 34 46.1	.8606151
26	21 33 10.13	14 8 8.2	.9620737	21 20.1	247 10 37.9	0 29 11.1	.8606881
27	21 37 40.22	13 50 44.1	.9656300	21 20.6	248 45 59.1	0 23 34.8	.8607600
28	21 42 10.06	13 32 55.0	.9691503	21 21.2	250 21 18.2	0 17 57.5	.8608308
29	21 46 39.64	13 14 41.5	.9726351	21 21.7	251 56 35.4	0 12 19.6	.8609004
30	21 51 8.92	12 56 4.0	.9760848	21 22.3	253 31 50.7	0 6 41.1	.8609688
31	21 55 37.89	12 37 3.1	.9795000	21 22.8	255 7 4.2	0 1 2.5	.8610359
Apr. 1	22 0 6.54	12 17 39.3	.9828811	21 23.3	256 42 16.0	0 4 36.1	.8611017
2	22 4 34.84	11 57 53.1	.9862285	21 23.8	258 17 26.1	0 10 14.3	.8611661
3	22 9 2.80	11 37 45.1	.9895428	21 24.3	259 52 34.5	0 15 52.0	.8612291
4	22 13 30.40	11 17 15.8	.9928245	21 24.9	261 27 41.4	0 21 28.9	.8612906
5	22 17 57.64	10 56 25.7	.9960740	21 25.4	263 2 46.9	0 27 4.7	.8613506
6	22 22 24.51	10 35 15.5	.9992918	21 25.9	264 37 51.0	0 32 39.1	.8614090
7	22 26 51.02	10 13 45.6	.0024783	21 26.4	266 12 53.7	0 38 12.0	.8614658
8	22 31 17.15	9 51 56.6	.0056341	21 26.9	267 47 55.2	0 43 43.0	.8615209
9	22 35 42.92	9 29 49.1	.0087595	21 27.3	269 22 55.6	0 49 12.0	.8615743
10	22 40 8.34	9 7 23.7	.0118551	21 27.8	270 57 54.8	0 54 38.6	.8616260
11	22 44 33.41	8 44 40.9	.0149213	21 28.3	272 32 52.9	1 0 2.6	.8616759
12	22 48 58.14	8 21 41.2	.0179584	21 28.7	274 7 50.1	1 5 23.8	.8617240
13	22 53 22.54	7 58 25.2	.0209670	21 29.2	275 42 46.4	1 10 42.0	.8617702
14	22 57 46.64	7 34 53.6	.0239473	21 29.7	277 17 41.8	1 15 56.8	.8618145
15	23 2 10.43	7 11 6.8	.0268995	21 30.1	278 52 36.4	1 21 8.1	.8618569
16	23 6 33.94	6 47 5.4	.0298239	21 30.6	280 27 30.4	1 26 15.7	.8618973
17	23 10 57.19	6 22 50.1	.0327207	21 31.0	282 2 23.7	1 31 19.3	.8619357
18	23 15 20.19	5 58 21.4	.0355902	21 31.4	283 37 16.5	1 36 18.6	.8619722
19	23 19 42.97	5 33 40.0	.0384325	21 31.9	285 12 8.9	1 41 13.5	.8620066
20	23 24 5.53	5 8 46.4	.0412478	21 32.3	286 47 0.8	1 46 3.7	.8620389
21	23 28 27.91	4 43 41.2	.0440363	21 32.7	288 21 52.4	1 50 49.0	.8620692
22	23 32 50.11	4 18 25.1	.0467982	21 33.2	289 56 43.8	1 55 29.3	.8620973
23	23 37 12.17	3 52 58.7	.0495336	21 33.6	291 31 34.9	2 0 4.2	.8621234
24	23 41 34.10	3 27 22.7	.0522427	21 34.0	293 6 25.9	2 4 33.6	.8621473
25	23 45 55.93	3 1 37.6	.0549256	21 34.4	294 41 16.9	2 8 57.3	.8621690
26	23 50 17.68	2 35 44.2	.0575824	21 34.8	296 16 7.9	2 13 15.1	.8621886
27	23 54 39.36	2 9 43.1	.0602134	21 35.3	297 50 58.9	2 17 26.8	.8622059
28	23 59 1.01	1 43 34.9	.0628188	21 35.7	299 25 50.1	2 21 32.2	.8622211
29	0 3 22.64	1 17 20.4	.0653988	21 36.1	301 0 41.4	2 25 31.1	.8622340
30	0 7 44.28	0 51 0.1	.0679535	21 36.5	302 35 33.0	2 29 23.4	.8622447
May 1	0 12 5.95	0 24 34.8	.0704831	21 36.9	304 10 24.9	2 33 8.9	.8622532
2	0 16 27.68	<i>North.</i> 0 1 54.9	.0729880	21 37.4	305 45 17.2	2 36 47.4	.8622595

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	<i>h m s</i>	<i>s</i>	<i>s.</i>	<i>South.</i> <i>° ' "</i>	<i>"</i>	<i>"</i>	<i>"</i>
Mar. 24	21 28 9.57	+11.27	0.63	14 26 59.3	+41.8	9.0	9.4
25	21 32 40.01	11.26	0.62	14 10 3.0	42.9	9.0	9.4
26	21 37 10.23	11.25	0.61	13 52 41.3	43.9	8.9	9.3
27	21 41 40.21	11.24	0.60	13 34 54.6	45.0	8.8	9.2
28	21 46 9.91	11.23	0.60	13 16 43.3	46.0	8.8	9.1
29	21 50 39.33	11.22	0.59	12 58 8.0	47.0	8.7	9.0
30	21 55 8.44	11.21	0.59	12 39 9.2	48.0	8.7	9.0
31	21 59 37.22	11.20	0.59	12 19 47.5	48.9	8.6	8.9
Apr. 1	22 4 5.67	11.18	0.58	12 0 3.3	49.8	8.5	8.8
2	22 8 33.76	11.17	0.58	11 39 57.2	50.7	8.4	8.7
3	22 13 1.49	11.15	0.58	11 19 29.7	51.6	8.4	8.7
4	22 17 28.86	11.14	0.57	10 58 41.4	52.4	8.3	8.6
5	22 21 55.87	11.12	0.57	10 37 32.8	53.2	8.3	8.6
6	22 26 22.51	11.10	0.56	10 16 4.6	54.0	8.2	8.5
7	22 30 48.77	11.09	0.56	9 54 17.2	54.8	8.2	8.5
8	22 35 14.68	11.07	0.55	9 32 11.2	55.6	8.1	8.4
9	22 39 40.22	11.06	0.55	9 9 47.2	56.3	8.0	8.3
10	22 44 5.42	11.04	0.55	8 47 5.7	57.0	8.0	8.3
11	22 48 30.27	11.03	0.54	8 24 7.3	57.7	7.9	8.2
12	22 52 54.79	11.01	0.53	8 0 52.6	58.4	7.8	8.1
13	22 57 19.00	11.00	0.53	7 37 22.1	59.1	7.8	8.1
14	23 1 42.91	10.99	0.52	7 13 36.4	59.7	7.7	8.0
15	23 6 6.53	10.98	0.52	6 49 36.1	60.3	7.7	8.0
16	23 10 29.88	10.97	0.51	6 25 21.8	60.9	7.6	7.9
17	23 14 52.99	10.96	0.51	6 0 54.0	61.4	7.6	7.9
18	23 19 15.87	10.95	0.50	5 36 13.4	61.9	7.5	7.8
19	23 23 38.53	10.94	0.50	5 11 20.6	62.4	7.5	7.8
20	23 28 1.00	10.93	0.50	4 46 16.1	62.9	7.4	7.7
21	23 32 23.30	10.93	0.49	4 21 0.7	63.3	7.4	7.7
22	23 36 45.45	10.92	0.49	3 55 34.9	63.7	7.3	7.6
23	23 41 7.47	10.92	0.49	3 29 59.3	64.1	7.3	7.6
24	23 45 29.39	10.91	0.48	3 4 14.7	64.5	7.2	7.5
25	23 49 51.22	10.91	0.48	2 38 21.6	64.8	7.2	7.5
26	23 54 12.99	10.91	0.47	2 12 20.8	65.1	7.1	7.4
27	23 58 34.71	10.90	0.47	1 46 12.8	65.4	7.1	7.4
28	0 2 56.42	10.90	0.47	1 19 58.4	65.7	7.0	7.3
29	0 7 18.13	10.90	0.47	0 53 38.3	65.9	7.0	7.3
30	0 11 39.88	10.91	0.46	0 27 13.0	66.1	7.0	7.3
May 1	0 16 1.68	10.91	0.46	0 0 43.2	66.3	6.9	7.2
				<i>North.</i>			
2	0 20 23.56	+10.91	0.46	0 25 50.3	+66.5	6.9	7.2

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
<div> <div> <div>h m s</div> <div>North.</div> <div>° ' "</div> </div> <div> <div>°</div> <div>h m</div> <div>° ' "</div> </div> <div> <div>South.</div> <div>9</div> </div> </div>							
May 2	0 16 27.68	0 1 54.9	0.729880	21 37.4	305 45 17.2	2 36 47.4	.8622595
3	0 20 49.49	0 28 28.3	0.754682	21 37.8	307 20 9.9	2 40 18.7	.8622634
4	0 25 11.42	0 55 4.8	0.779241	21 38.2	308 55 3.0	2 43 42.7	.8622652
5	0 29 33.48	1 21 43.7	0.803561	21 38.6	310 29 56.6	2 46 59.2	.8622647
6	0 33 55.71	1 48 24.4	0.827644	21 39.1	312 4 50.8	2 50 8.1	.8622619
7	0 38 18.13	2 15 6.2	0.851495	21 39.5	313 39 45.6	2 53 9.2	.8622569
8	0 42 40.78	2 41 48.4	0.875115	21 39.9	315 14 41.1	2 56 2.4	.8622496
9	0 47 3.69	3 8 30.4	0.898506	21 40.4	316 49 37.3	2 58 47.6	.8622401
10	0 51 26.89	3 35 11.6	0.921672	21 40.8	318 24 34.2	3 1 24.7	.8622284
11	0 55 50.41	4 1 51.4	0.944614	21 41.3	319 59 31.9	3 3 53.4	.8622144
12	1 0 14.29	4 28 29.0	0.967334	21 41.7	321 34 30.4	3 6 13.8	.8621982
13	1 4 38.55	4 55 3.9	0.989835	21 42.2	323 9 29.8	3 8 25.7	.8621799
14	1 9 3.24	5 21 35.5	1.012118	21 42.7	324 44 30.1	3 10 28.9	.8621593
15	1 13 28.39	5 48 3.0	1.034186	21 43.2	326 19 31.3	3 12 23.5	.8621366
16	1 17 54.02	6 14 25.9	1.056038	21 43.7	327 54 33.5	3 14 9.2	.8621117
17	1 22 20.18	6 40 43.5	1.077677	21 44.2	329 29 36.7	3 15 46.1	.8620847
18	1 26 46.90	7 6 55.1	1.099103	21 44.7	331 4 40.9	3 17 14.1	.8620555
19	1 31 14.20	7 33 0.1	1.120316	21 45.2	332 39 46.2	3 18 33.0	.8620243
20	1 35 42.13	7 58 57.8	1.141318	21 45.7	334 14 52.5	3 19 42.9	.8619910
21	1 40 10.70	8 24 47.4	1.162108	21 46.3	335 50 0.0	3 20 43.6	.8619556
22	1 44 39.96	8 50 28.4	1.182687	21 46.8	337 25 8.6	3 21 35.1	.8619182
23	1 49 9.93	9 16 0.0	1.203056	21 47.4	339 0 18.4	3 22 17.4	.8618788
24	1 53 40.65	9 41 21.5	1.223214	21 48.0	340 35 29.4	3 22 50.4	.8618374
25	1 58 12.13	10 6 32.2	1.243162	21 48.6	342 10 41.6	3 23 14.1	.8617941
26	2 2 44.40	10 31 31.5	1.262901	21 49.2	343 45 55.0	3 23 28.4	.8617489
27	2 7 17.50	10 56 18.6	1.282430	21 49.8	345 21 9.7	3 23 33.4	.8617018
28	2 11 51.44	11 20 52.8	1.301751	21 50.4	346 56 25.6	3 23 29.1	.8616528
29	2 16 26.24	11 45 13.4	1.320865	21 51.1	348 31 42.8	3 23 15.4	.8616021
30	2 21 1.93	12 9 19.7	1.339773	21 51.8	350 7 1.3	3 22 52.4	.8615496
31	2 25 38.53	12 33 10.9	1.358475	21 52.4	351 42 21.1	3 22 20.0	.8614954
June 1	2 30 16.06	12 56 46.4	1.376974	21 53.1	353 17 42.2	3 21 38.3	.8614395
2	2 34 54.53	13 20 5.4	1.395272	21 53.8	354 53 4.7	3 20 47.3	.8613819
3	2 39 33.97	13 43 7.3	1.413369	21 54.6	356 28 28.5	3 19 47.1	.8613227
4	2 44 14.39	14 5 51.3	1.431269	21 55.3	358 3 53.7	3 18 37.6	.8612620
5	2 48 55.82	14 28 16.8	1.448972	21 56.1	359 39 20.3	3 17 18.9	.8611998
6	2 53 38.27	14 50 23.0	1.466480	21 56.9	1 14 48.2	3 15 51.1	.8611361
7	2 58 21.75	15 12 9.3	1.483795	21 57.7	2 50 17.6	3 14 14.2	.8610710
8	3 3 6.28	15 33 34.9	1.500918	21 58.5	4 25 48.4	3 12 28.3	.8610045
9	3 7 51.87	15 54 39.3	1.517851	21 59.3	6 1 20.6	3 10 33.5	.8609367
10	3 12 38.55	16 15 21.6	1.534595	22 0.2	7 36 54.3	3 8 29.8	.8608677
11	3 17 26.31	16 35 41.3	1.551152	22 1.0	9 12 29.4	3 6 17.4	.8607974
12	3 22 15.18	16 55 37.6	1.567524	22 1.9	10 48 6.0	3 3 56.3	.8607260

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				<i>North.</i>			
May 2	^h 0 ^m 20 ^s 23.56	^s +10.91	^s 0.46	^o 0 25 50.3	+66.5	6.9	7.2
3	0 24 45.55	10.92	0.46	0 52 27.0	66.6	6.9	7.2
4	0 29 7.67	10.92	0.46	1 19 6.2	66.7	6.8	7.1
5	0 33 29.96	10.93	0.46	1 45 47.2	66.8	6.8	7.1
6	0 37 52.44	10.94	0.46	2 12 29.3	66.8	6.8	7.1
7	0 42 15.15	10.95	0.45	2 39 12.0	66.8	6.7	7.0
8	0 46 38.11	10.96	0.45	3 5 54.6	66.8	6.7	7.0
9	0 51 1.36	10.98	0.45	3 52 36.4	65.7	6.5	6.9
10	0 55 24.92	10.99	0.44	3 59 16.8	66.6	6.6	6.9
11	0 59 48.85	11.01	0.44	4 25 55.2	66.5	6.6	6.9
12	1 4 13.16	11.03	0.43	4 52 30.9	66.4	6.5	6.8
13	1 8 37.89	11.05	0.43	5 19 3.4	66.2	6.5	6.8
14	1 13 3.08	11.06	0.43	5 45 31.8	66.1	6.5	6.8
15	1 17 28.76	11.08	0.43	6 11 55.7	65.9	6.4	6.7
16	1 21 54.96	11.10	0.43	6 38 14.4	65.7	6.4	6.7
17	1 26 21.72	11.13	0.43	7 4 27.1	65.4	6.4	6.7
18	1 30 49.06	11.15	0.42	7 30 33.3	65.1	6.3	6.6
19	1 35 17.02	11.18	0.42	7 56 32.3	64.8	6.3	6.6
20	1 39 45.63	11.21	0.42	8 22 23.3	64.5	6.3	6.6
21	1 44 14.93	11.24	0.42	8 48 5.7	64.1	6.3	6.5
22	1 48 44.94	11.27	0.42	9 13 38.8	63.7	6.3	6.5
23	1 53 15.69	11.30	0.42	9 39 1.8	63.2	6.3	6.5
24	1 57 47.21	11.33	0.42	10 4 14.2	62.7	6.2	6.4
25	2 2 19.52	11.36	0.42	10 29 15.2	62.2	6.2	6.4
26	2 6 52.65	11.39	0.42	10 54 4.0	61.7	6.2	6.4
27	2 11 26.63	11.43	0.42	11 18 40.1	61.2	6.2	6.4
28	2 16 1.48	11.47	0.42	11 43 2.6	60.6	6.1	6.3
29	2 20 37.21	11.51	0.42	12 7 10.8	60.0	6.1	6.3
30	2 25 13.86	11.55	0.42	12 31 4.1	59.4	6.1	6.3
31	2 29 51.43	11.59	0.42	12 54 41.7	58.7	6.1	6.3
June 1	2 34 29.96	11.63	0.42	13 18 2.8	58.0	6.0	6.2
2	2 39 9.45	11.67	0.42	13 41 6.9	57.3	6.0	6.2
3	2 43 49.93	11.71	0.41	14 3 53.2	56.6	6.0	6.2
4	2 48 31.42	11.75	0.41	14 26 21.0	55.8	6.0	6.2
5	2 53 13.93	11.79	0.41	14 48 29.7	55.0	5.9	6.1
6	2 57 57.47	11.84	0.41	15 10 18.4	54.1	5.9	6.1
7	3 2 42.07	11.88	0.41	15 31 46.6	53.2	5.9	6.1
8	3 7 27.74	11.93	0.41	15 52 53.4	52.3	5.9	6.1
9	3 12 14.48	11.97	0.41	16 13 38.4	51.4	5.8	6.0
10	3 17 2.32	12.02	0.41	16 34 0.7	50.4	5.8	6.0
11	3 21 51.28	12.06	0.41	16 53 59.7	49.4	5.8	6.0
12	3 26 41.35	+12.11	0.41	17 13 34.8	+48.4	5.8	6.0

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	North.		°		South.		9
	h m s	° ' "		h m	° ' "	° ' "	
June 12	3 22 15.18	16 55 37.6	1567524	22 1.9	10 48 6.0	3 3 56.3	.8607260
13	3 27 5.16	17 15 10.0	1583711	22 2.8	12 23 44.0	3 1 26.6	.8606535
14	3 31 56.27	17 34 17.6	1599714	22 3.8	13 59 23.6	2 58 48.5	.8605799
15	3 36 48.49	17 52 59.9	1615534	22 4.7	15 35 4.6	2 56 2.0	.8605053
16	3 41 41.84	18 11 16.2	1631171	22 5.7	17 10 47.2	2 53 7.3	.8604298
17	3 46 36.32	18 29 5.7	1646625	22 6.7	18 46 31.3	2 50 4.4	.8603534
18	3 51 31.92	18 46 27.9	1661896	22 7.7	20 22 16.9	2 46 53.6	.8602762
19	3 56 28.66	19 3 22.0	1676985	22 8.7	21 58 4.0	2 43 35.0	.8601982
20	4 1 26.52	19 19 47.4	1691892	22 9.7	23 33 52.7	2 40 8.7	.8601195
21	4 6 25.49	19 35 43.5	1706616	22 10.8	25 9 42.9	2 36 34.9	.8600402
22	4 11 25.57	19 51 9.5	1721157	22 11.9	26 45 34.7	2 32 53.7	.8599603
23	4 16 26.73	20 6 5.0	1735516	22 13.0	28 21 28.0	2 29 5.3	.8598799
24	4 21 28.96	20 20 29.2	1749692	22 14.1	29 57 22.9	2 25 9.9	.8597990
25	4 26 32.25	20 34 21.6	1763684	22 15.2	31 33 19.4	2 21 7.6	.8597178
26	4 31 36.57	20 47 41.5	1777494	22 16.3	33 9 17.4	2 16 58.6	.8596362
27	4 36 41.89	21 0 28.4	1791122	22 17.5	34 45 17.1	2 12 43.1	.8595543
28	4 41 48.20	21 12 41.7	1804568	22 18.7	36 21 18.4	2 8 21.3	.8594722
29	4 46 55.46	21 24 20.9	1817832	22 19.9	37 57 21.3	2 3 53.5	.8593901
30	4 52 3.64	21 35 25.5	1830916	22 21.1	39 33 25.8	1 59 19.7	.8593078
July 1	4 57 12.71	21 45 54.8	1843821	22 22.3	41 9 32.0	1 54 40.2	.8592255
2	5 2 22.64	21 55 48.4	1856547	22 23.5	42 45 39.8	1 49 55.2	.8591433
3	5 7 33.38	22 5 6.0	1869095	22 24.8	44 21 49.3	1 45 5.0	.8590612
4	5 12 44.90	22 13 46.9	1881468	22 26.0	45 58 0.5	1 40 9.7	.8589793
5	5 17 57.16	22 21 50.8	1893666	22 27.3	47 34 13.4	1 35 9.6	.8588976
6	5 23 10.12	22 29 17.3	1905691	22 28.6	49 10 27.9	1 30 4.9	.8588163
7	5 28 23.73	22 36 6.1	1917544	22 29.9	50 46 44.2	1 24 55.9	.8587353
8	5 33 37.96	22 42 16.7	1929226	22 31.2	52 23 2.2	1 19 42.8	.8586548
9	5 38 52.76	22 47 48.9	1940739	22 32.5	53 59 22.0	1 14 25.8	.8585748
10	5 44 8.09	22 52 42.3	1952084	22 33.9	55 35 43.5	1 9 5.2	.8584954
11	5 49 23.90	22 56 56.7	1963261	22 35.2	57 12 6.8	1 3 41.2	.8584166
12	5 54 40.14	23 0 31.7	1974272	22 36.5	58 48 31.8	0 58 14.1	.8583385
13	5 59 56.77	23 3 27.2	1985117	22 37.9	60 24 58.5	0 52 44.1	.8582611
14	6 5 13.74	23 5 42.9	1995797	22 39.2	62 1 27.1	0 47 11.5	.8581846
15	6 10 30.99	23 7 18.7	2006314	22 40.6	63 37 57.4	0 41 36.6	.8581090
16	6 15 48.49	23 8 14.4	2016666	22 41.9	65 14 29.4	0 35 59.5	.8580343
17	6 21 6.17	23 8 29.8	2026854	22 43.3	66 51 3.3	0 30 20.7	.8579606
18	6 26 23.99	23 8 4.9	2036879	22 44.6	68 27 38.9	0 24 40.3	.8578880
19	6 31 41.90	23 6 59.5	2046740	22 46.0	70 4 16.3	0 18 58.6	.8578165
20	6 36 59.84	23 5 13.7	2056438	22 47.3	71 40 55.5	0 13 15.9	.8577461
21	6 42 17.76	23 2 47.4	2065971	22 48.7	73 17 36.5	0 7 32.5	.8576770
22	6 47 35.60	22 59 40.6	2075340	22 50.0	74 54 19.3	0 1 48.6	.8576092

North.

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	<i>h m s</i>	<i>s</i>	<i>s</i>	<i>North.</i> <i>° ' "</i>	<i>"</i>	<i>"</i>	<i>"</i>
June 12	3 26 41.35	+12.11	0.41	17 13 34.8	+48.4	5.8	6.0
13	3 31 32.54	12.15	0.41	17 32 45.2	47.3	5.8	6.0
14	3 36 24.86	12.20	0.40	17 51 30.3	46.3	5.7	5.9
15	3 41 18.31	12.25	0.40	18 9 49.4	45.2	5.7	5.9
16	3 46 12.90	12.30	0.40	18 27 41.8	44.1	5.7	5.9
17	3 51 8.62	12.35	0.40	18 45 6.9	43.0	5.7	5.9
18	3 56 5.47	12.39	0.40	19 2 3.9	41.8	5.6	5.8
19	4 1 3.46	12.44	0.40	19 18 32.3	40.6	5.6	5.8
20	4 6 2.56	12.49	0.40	19 34 31.3	39.3	5.6	5.8
21	4 11 2.77	12.54	0.40	19 50 0.4	38.1	5.6	5.8
22	4 16 4.08	12.58	0.40	20 4 58.8	36.8	5.6	5.8
23	4 21 6.46	12.63	0.39	20 19 26.0	35.5	5.5	5.7
24	4 26 9.91	12.67	0.39	20 33 21.4	34.1	5.5	5.7
25	4 31 14.39	12.71	0.39	20 46 44.4	32.8	5.5	5.7
26	4 36 19.88	12.75	0.39	20 59 34.3	31.4	5.5	5.7
27	4 41 26.36	12.79	0.39	21 11 50.7	30.0	5.5	5.7
28	4 46 33.81	12.83	0.39	21 23 32.9	28.5	5.4	5.6
29	4 51 42.18	12.87	0.39	21 34 40.4	27.1	5.4	5.6
30	4 56 51.45	12.90	0.39	21 45 12.7	25.6	5.4	5.6
July 1	5 2 1.58	12.94	0.39	21 55 9.3	24.1	5.4	5.6
2	5 7 12.54	12.97	0.39	22 4 29.7	22.6	5.4	5.6
3	5 12 24.28	13.01	0.39	22 13 13.6	21.1	5.4	5.6
4	5 17 36.77	13.04	0.38	22 21 20.4	19.5	5.3	5.5
5	5 22 49.96	13.07	0.38	22 28 49.7	17.9	5.3	5.5
6	5 28 3.81	13.09	0.38	22 35 41.3	16.3	5.3	5.5
7	5 33 18.29	13.12	0.38	22 41 54.7	14.7	5.3	5.5
8	5 38 33.34	13.14	0.38	22 47 29.5	13.1	5.3	5.5
9	5 43 48.92	13.16	0.38	22 52 25.6	11.5	5.3	5.5
10	5 49 4.99	13.18	0.38	22 56 42.5	9.9	5.3	5.5
11	5 54 21.50	13.20	0.38	23 0 20.0	8.3	5.2	5.4
12	5 59 38.40	13.21	0.38	23 3 18.1	6.6	5.2	5.4
13	6 4 55.65	13.22	0.38	23 5 36.3	5.0	5.2	5.4
14	6 10 13.19	13.23	0.38	23 7 14.4	3.3	5.2	5.4
15	6 15 30.97	13.24	0.38	23 8 12.3	+ 1.6	5.2	5.4
16	6 20 48.94	13.25	0.38	23 8 30.0	- 0.1	5.2	5.4
17	6 26 7.05	13.25	0.38	23 8 7.2	1.8	5.2	5.4
18	6 31 25.26	13.26	0.37	23 7 3.9	3.5	5.2	5.4
19	6 36 43.50	13.26	0.37	23 5 20.1	5.2	5.1	5.3
20	6 42 1.72	13.26	0.37	23 2 55.7	6.9	5.1	5.3
21	6 47 19.86	13.25	0.37	22 59 50.8	8.6	5.1	5.3
22	6 52 37.88	13.25	0.37	22 56 5.4	10.3	5.1	5.3
23	6 57 55.72	+13.24	0.37	22 51 39.5	-12.0	5.1	5.3

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	^h ^m ^s	[°] ['] ["]	[°]	^h ^m	[°] ['] ["]	^{North}	9
July 23	6 52 53.32	22 55 53.4	2084544	22 51.4	76 31 3.8	0 3 55.5	8575428
24	6 58 10.85	22 51 25.8	2093584	22 52.7	78 7 50.1	0 9 39.5	8574777
25	7 3 28.14	22 46 18.0	2102459	22 54.1	79 44 38.2	0 15 23.1	8574141
26	7 8 45.15	22 40 30.1	2111169	22 55.4	81 21 28.1	0 21 6.1	8573520
27	7 14 1.81	22 34 2.2	2119715	22 56.7	82 58 19.8	0 26 48.2	8572914
28	7 19 18.09	22 26 54.5	2128096	22 58.1	84 35 15.2	0 32 29.1	8572324
29	7 24 33.92	22 19 7.3	2136314	22 59.4	86 12 8.3	0 38 8.6	8571751
30	7 29 49.26	22 10 40.8	2144368	23 0.7	87 49 5.2	0 43 46.3	8571195
31	7 35 4.06	22 1 35.3	2152260	23 2.0	89 26 3.7	0 49 22.0	8570656
Aug. 1	7 40 18.28	21 51 51.1	2159992	23 3.3	91 3 4.0	0 54 55.5	8570135
2	7 45 31.87	21 41 28.5	2167563	23 4.5	92 40 5.9	1 0 26.4	8569633
3	7 50 44.79	21 30 28.0	2174976	23 5.8	94 17 9.5	1 5 54.5	8569149
4	7 55 57.00	21 18 49.8	2182232	23 7.1	95 54 14.6	1 11 19.5	8568685
5	8 1 8.46	21 6 34.5	2189331	23 8.3	97 31 21.4	1 16 41.2	8568240
6	8 6 19.15	20 53 42.3	2196275	23 9.5	99 8 29.7	1 21 59.2	8567815
7	8 11 29.03	20 40 13.8	2203065	23 10.7	100 45 39.6	1 27 13.4	8567410
8	8 16 38.06	20 26 9.4	2209702	23 11.9	102 22 50.9	1 32 23.4	8567026
9	8 21 46.23	20 11 29.6	2216188	23 13.1	104 0 3.7	1 37 29.1	8566663
10	8 26 53.51	19 56 14.8	2222523	23 14.3	105 37 18.0	1 42 30.2	8566321
11	8 31 59.88	19 40 25.6	2228709	23 15.4	107 14 33.6	1 47 26.4	8566001
12	8 37 5.32	19 24 2.5	2234747	23 16.5	108 51 50.6	1 52 17.5	8565702
13	8 42 9.81	19 7 5.9	2240636	23 17.7	110 29 8.9	1 57 3.2	8565425
14	8 47 13.34	18 49 36.6	2246379	23 18.8	112 6 28.5	2 1 43.3	8565171
15	8 52 15.90	18 31 35.0	2251975	23 19.9	113 43 49.2	2 6 17.6	8564939
16	8 57 17.48	18 13 1.7	2257425	23 20.9	115 21 11.1	2 10 45.9	8564729
17	9 2 18.07	17 53 57.3	2262728	23 22.0	116 58 34.1	2 15 8.0	8564543
18	9 7 17.67	17 34 22.4	2267884	23 23.0	118 35 58.2	2 19 23.5	8564379
19	9 12 16.27	17 14 17.6	2272894	23 24.0	120 13 23.2	2 23 32.3	8564238
20	9 17 13.87	16 53 43.6	2277757	23 25.0	121 50 49.2	2 27 34.3	8564121
21	9 22 10.46	16 32 40.9	2282473	23 26.0	123 28 16.0	2 31 29.2	8564026
22	9 27 6.05	16 11 10.3	2287043	23 27.0	125 5 43.7	2 35 16.7	8563955
23	9 32 0.64	15 49 12.4	2291466	23 27.9	126 43 12.1	2 38 56.8	8563908
24	9 36 54.23	15 26 47.9	2295742	23 28.9	128 20 41.1	2 42 29.3	8563884
25	9 41 46.83	15 3 57.4	2299872	23 29.8	129 58 10.7	2 45 53.9	8563883
26	9 46 38.45	14 40 41.7	2303855	23 30.7	131 35 40.9	2 49 10.5	8563906
27	9 51 29.10	14 17 1.5	2307692	23 31.6	133 13 11.5	2 52 19.0	8563952
28	9 56 18.79	13 52 57.4	2311384	23 32.4	134 50 42.5	2 55 19.1	8564022
29	10 1 7.53	13 28 30.3	2314931	23 33.3	136 28 13.9	2 58 10.8	8564116
30	10 5 55.34	13 3 40.8	2318334	23 34.1	138 5 45.4	3 0 53.9	8564232
31	10 10 42.23	12 38 29.7	2321593	23 35.0	139 43 17.0	3 3 28.3	8564372
Sept. 1	10 15 28.21	12 57.6	2324711	23 35.8	141 20 48.7	3 5 53.8	8564534
2	10 20 13.32	11 47 5.3	2327687	23 36.6	142 58 20.4	3 8 10.3	8564720

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
	^h ^m ^s	[°]	[°]	[°] ['] ["]	["]	["]	["]
July 23	6 57 55.72	+13.24	0.37	22 51 39.5	-12.0	5.1	5.3
24	7 3 13.32	13.23	0.37	22 46 33.3	13.6	5.1	5.3
25	7 8 30.64	13.21	0.37	22 40 46.9	15.3	5.1	5.3
26	7 13 47.62	13.20	0.37	22 34 20.4	16.9	5.1	5.3
27	7 19 4.20	13.18	0.37	22 27 14.1	18.6	5.1	5.3
28	7 24 20.35	13.16	0.36	22 19 28.2	20.2	5.0	5.2
29	7 29 36.00	13.14	0.36	22 11 2.9	21.9	5.0	5.2
30	7 34 51.11	13.12	0.36	22 1 58.5	23.5	5.0	5.2
31	7 40 5.64	13.10	0.36	21 52 15.4	25.1	5.0	5.2
Aug. 1	7 45 19.53	13.07	0.36	21 41 53.8	26.7	5.0	5.2
2	7 50 32.75	13.04	0.36	21 30 54.1	28.3	5.0	5.2
3	7 55 45.26	13.01	0.36	21 19 16.8	29.8	5.0	5.2
4	8 0 57.03	12.98	0.35	21 7 2.2	31.4	5.0	5.2
5	8 6 8.01	12.94	0.35	20 54 10.7	32.9	5.0	5.2
6	8 11 18.17	12.91	0.35	20 40 42.8	34.4	5.0	5.2
7	8 16 27.50	12.87	0.35	20 26 38.9	35.9	5.0	5.2
8	8 21 35.96	12.84	0.35	20 11 59.5	37.4	5.0	5.2
9	8 26 43.52	12.80	0.34	19 56 45.1	38.8	4.9	5.1
10	8 31 50.16	12.76	0.34	19 40 56.3	40.3	4.9	5.1
11	8 36 55.87	12.72	0.34	19 24 33.4	41.7	4.9	5.1
12	8 42 0.63	12.68	0.34	19 7 37.1	43.1	4.9	5.1
13	8 47 4.43	12.64	0.34	18 50 7.9	44.4	4.9	5.1
14	8 52 7.25	12.60	0.34	18 32 6.4	45.7	4.9	5.1
15	8 57 9.09	12.56	0.34	18 13 33.1	47.0	4.9	5.1
16	9 2 9.93	12.52	0.34	17 54 28.7	48.3	4.9	5.1
17	9 7 9.77	12.48	0.34	17 34 53.8	49.5	4.9	5.1
18	9 12 8.61	12.44	0.34	17 14 48.9	50.8	4.9	5.1
19	9 17 6.45	12.39	0.34	16 54 14.7	52.0	4.9	5.1
20	9 22 3.27	12.35	0.34	16 33 11.9	53.2	4.9	5.1
21	9 26 59.08	12.31	0.34	16 11 41.1	54.3	4.9	5.1
22	9 31 53.89	12.26	0.34	15 49 42.9	55.5	4.9	5.1
23	9 36 47.70	12.22	0.34	15 27 18.1	56.6	4.9	5.1
24	9 41 40.51	12.18	0.34	15 4 27.3	57.7	4.9	5.1
25	9 46 32.34	12.14	0.33	14 41 11.2	58.7	4.8	5.0
26	9 51 23.19	12.10	0.33	14 17 30.6	59.7	4.8	5.0
27	9 56 13.08	12.06	0.33	13 53 26.2	60.7	4.8	5.0
28	10 1 2.02	12.02	0.33	13 28 58.6	61.6	4.8	5.0
29	10 5 50.01	11.98	0.33	13 4 8.6	62.5	4.8	5.0
30	10 10 37.08	11.94	0.33	12 38 57.0	63.4	4.8	5.0
31	10 15 23.25	11.91	0.33	12 13 24.4	64.3	4.8	5.0
Sept. 1	10 20 8.54	11.87	0.33	11 47 31.5	65.1	4.8	5.0
2	10 24 52.96	+11.84	0.33	11 21 19.2	-65.9	4.8	5.0

MEAN TIME.									
Month and Day.		Geocentric.				Heliocentric.			
		Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vest.	
		Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
Sept.	2	h m s 10 20 13.32	North. ° ' " 11 47 5.3	° 2327687	h m 23 36.6	° ' " 142 58 20.4	North. ° ' " 3 8 10.3	9 8564720	
	3	10 24 57.57	11 20 53.5	2330523	23 37.4	144 35 51.9	3 10 17.8	8564928	
	4	10 29 40.99	10 54 22.9	2333221	23 38.1	146 13 23.2	3 12 16.1	8565159	
	5	10 34 23.60	10 27 34.3	2335781	23 38.9	147 50 54.3	3 14 5.1	8565412	
	6	10 39 5.43	10 0 28.4	2338206	23 39.6	149 28 24.9	3 15 44.8	8565687	
	7	10 43 46.51	9 33 5.9	2340496	23 40.4	151 5 55.1	3 17 15.0	8565984	
	8	10 48 26.86	9 5 27.5	2342653	23 41.1	152 43 24.7	3 18 35.7	8566303	
	9	10 53 6.53	8 37 34.0	2344678	23 41.8	154 20 53.6	3 19 46.8	8566643	
	10	10 57 45.53	8 9 26.0	2346572	23 42.5	155 58 21.9	3 20 48.4	8567005	
	11	11 2 23.91	7 41 4.2	2348336	23 43.2	157 35 49.3	3 21 40.2	8567387	
	12	11 7 1.70	7 12 29.4	2349971	23 43.8	159 13 15.8	3 22 22.3	8567790	
	13	11 11 38.95	6 43 42.2	2351476	23 44.5	160 50 41.3	3 22 54.7	8568213	
	14	11 16 15.68	6 14 43.5	2352853	23 45.2	162 28 5.8	3 23 17.4	8568657	
	15	11 20 51.93	5 45 33.8	2354102	23 45.8	164 5 29.1	3 23 30.3	8569119	
	16	11 25 27.75	5 16 14.0	2355223	23 46.5	165 42 51.1	3 23 33.4	8569601	
	17	11 30 3.16	4 46 44.7	2356215	23 47.1	167 20 11.8	3 23 26.7	8570101	
	18	11 34 38.22	4 17 6.6	2357080	23 47.8	168 57 31.1	3 23 10.3	8570620	
	19	11 39 12.95	3 47 20.6	2357817	23 48.4	170 34 48.9	3 22 44.1	8571157	
	20	11 43 47.40	3 17 27.3	2358426	23 49.0	172 12 5.2	3 22 8.2	8571711	
	21	11 48 21.61	2 47 27.5	2358907	23 49.6	173 49 19.8	3 21 22.6	8572282	
	22	11 52 55.62	2 17 21.9	2359259	23 50.3	175 26 32.7	3 20 27.4	8572869	
	23	11 57 29.46	1 47 11.3	2359484	23 50.9	177 3 43.8	3 19 22.6	8573473	
	24	12 2 3.18	1 16 56.4	2359580	23 51.5	178 40 53.0	3 18 8.3	8574092	
	25	12 6 36.81	0 46 37.9	2359549	23 52.1	180 18 0.3	3 16 44.6	8574726	
	26	12 11 10.39	0 16 16.6	2359389	23 52.7	181 55 5.5	3 15 11.5	8575374	
	Oct.		South.						
27		12 15 43.97	0 14 6.7	2359103	23 53.4	183 32 8.7	3 13 29.1	8576037	
28		12 20 17.59	0 44 31.3	2358690	23 54.0	185 9 9.7	3 11 37.5	8576713	
29		12 24 51.28	1 14 56.4	2358150	23 54.6	186 46 8.5	3 9 36.8	8577402	
30		12 29 25.08	1 45 21.3	2357486	23 55.2	188 23 5.1	3 7 27.2	8578104	
1		12 33 59.04	2 15 45.2	2356698	23 55.8	189 59 59.3	3 5 8.6	8578817	
2		12 38 33.20	2 46 7.3	2355787	23 56.5	191 36 51.2	3 2 41.3	8579542	
3		12 43 7.59	3 16 27.0	2354754	23 57.1	193 13 40.7	3 0 5.4	8580277	
4		12 47 42.26	3 46 43.3	2353600	23 57.7	194 50 27.7	2 57 21.0	8581022	
5		12 52 17.24	4 16 55.7	2352326	23 58.4	196 27 12.3	2 54 28.2	8581777	
6		12 56 52.59	4 47 3.3	2350934	23 59.0	198 3 54.3	2 51 27.2	8582541	
7		13 1 28.34	5 17 5.4	2349424	23 59.7	199 40 33.8	2 48 18.1	8583313	
8	13 6 4.54	5 47 1.3	2347799	* *	201 17 10.7	2 45 1.2	8584092		
9	13 10 41.22	6 16 50.1	2346058	0 0.4	202 53 45.0	2 41 36.5	8584879		
10	13 15 18.43	6 46 31.2	2344204	0 1.1	204 30 16.6	2 38 4.2	8585672		
11	13 19 56.21	7 16 3.8	2342236	0 1.8	206 6 45.5	2 34 24.6	8586470		
12	13 24 34.60	7 45 27.2	2340156	0 2.5	207 43 11.8	2 30 37.7	8587274		

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
<i>North.</i>							
Sept. 2	^h 10 ^m 24 ^s 52.96	+11.84	0.33	[°] 11 ['] 21 ["] 19.2	-65.9	4.8	5.0
3	10 29 36.54	11.80	0.33	10 54 48.1	66.7	4.8	5.0
4	10 34 19.32	11.77	0.32	10 27 58.9	67.4	4.8	5.0
5	10 39 1.31	11.73	0.32	10 0 52.4	68.1	4.8	5.0
6	10 43 42.54	11.70	0.32	9 33 29.2	68.8	4.8	5.0
7	10 48 23.05	11.67	0.32	9 5 50.2	69.5	4.8	5.0
8	10 53 2.86	11.64	0.32	8 37 56.1	70.1	4.8	5.0
9	10 57 42.00	11.62	0.32	8 9 47.4	70.6	4.8	5.0
10	11 2 20.53	11.59	0.32	7 41 25.0	71.2	4.8	5.0
11	11 6 58.46	11.57	0.32	7 12 49.5	71.7	4.8	5.0
12	11 11 35.84	11.55	0.32	6 44 1.7	72.2	4.8	5.0
13	11 16 12.70	11.53	0.32	6 15 2.2	72.7	4.8	5.0
14	11 20 49.09	11.51	0.32	5 45 51.9	73.1	4.8	5.0
15	11 25 25.03	11.50	0.32	5 16 31.3	73.5	4.8	5.0
16	11 30 0.58	11.48	0.32	4 47 1.3	73.9	4.8	5.0
17	11 34 35.76	11.46	0.32	4 17 22.6	74.3	4.8	5.0
18	11 39 10.62	11.45	0.32	3 47 35.8	74.6	4.8	5.0
19	11 43 45.19	11.44	0.32	3 17 41.8	74.9	4.8	5.0
20	11 48 19.52	11.43	0.32	2 47 41.3	75.1	4.8	5.0
21	11 52 53.65	11.42	0.32	2 17 34.9	75.4	4.8	5.0
22	11 57 27.61	11.41	0.32	1 47 23.6	75.6	4.8	5.0
23	12 2 1.44	11.41	0.32	1 17 7.9	75.8	4.8	5.0
24	12 6 35.19	11.41	0.32	0 46 48.6	75.9	4.8	5.0
25	* * *	*	*	* * *	*	*	*
26	12 11 8.90	11.40	0.32	0 16 26.6	76.0	4.8	5.0
<i>South.</i>							
27	12 15 42.59	11.40	0.32	0 13 57.5	76.0	4.8	5.0
28	12 20 16.32	11.40	0.32	0 44 22.9	76.0	4.8	5.0
29	12 24 50.13	11.41	0.32	1 14 48.8	76.0	4.8	5.0
30	12 29 24.06	11.42	0.32	1 45 14.4	76.0	4.8	5.0
Oct. 1	12 33 58.13	11.43	0.32	2 15 39.1	75.9	4.8	5.0
2	12 38 32.40	11.44	0.32	2 46 2.1	75.8	4.8	5.0
3	12 43 6.91	11.45	0.32	3 16 22.5	75.7	4.8	5.0
4	12 47 41.70	11.46	0.32	3 46 39.7	75.6	4.8	5.0
5	12 52 16.81	11.47	0.32	4 16 52.9	75.4	4.8	5.0
6	12 56 52.29	11.49	0.32	4 47 1.3	75.2	4.8	5.0
7	13 1 28.16	11.50	0.32	5 17 4.4	75.0	4.8	5.0
8	13 6 4.48	11.52	0.32	5 47 0.9	74.7	4.8	5.0
9	13 10 41.29	11.54	0.32	6 16 50.6	74.4	4.8	5.0
10	13 15 18.64	11.57	0.32	6 46 32.5	74.0	4.8	5.0
11	13 19 56.55	11.59	0.32	7 16 6.0	73.7	4.8	5.0
12	13 24 35.08	11.62	0.32	7 45 30.2	73.3	4.8	5.0
13	13 29 14.26	+11.65	0.32	8 14 44.3	-72.9	4.8	5.0

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>South. ° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North. ° ' "</i>	<i>9</i>
Oct. 13	13 29 13.65	8 14 40.5	2337963	0 3.2	209 19 35.3	2 26 43.9	8588082
14	13 33 53.39	8 43 43.1	2335658	0 3.9	210 55 56.1	2 22 43.2	8588804
15	13 38 33.87	9 12 34.1	2333241	0 4.6	212 32 14.2	2 18 35.9	8589709
16	13 43 15.11	9 41 12.7	2330713	0 5.4	214 8 29.5	2 14 22.2	8590526
17	13 47 57.16	10 9 38.3	2328072	0 6.1	215 44 42.1	2 10 2.3	8591345
18	13 52 40.06	10 37 50.0	2325319	0 6.9	217 20 51.9	2 5 36.4	8592166
19	13 57 23.84	11 5 46.9	2322454	0 7.7	218 56 59.0	2 1 4.7	8592987
20	14 2 8.53	11 33 28.4	2319476	0 8.5	220 33 3.4	1 56 27.4	8593808
21	14 6 54.17	12 0 53.6	2316386	0 9.3	222 9 5.1	1 51 44.8	8594629
22	14 11 40.79	12 28 1.7	2313183	0 10.1	223 45 4.1	1 46 57.0	8595448
23	14 16 28.42	12 54 51.8	2309867	0 11.0	225 21 0.4	1 42 4.4	8596266
24	14 21 17.08	13 21 23.2	2306437	0 11.9	226 56 54.0	1 37 7.1	8597081
25	14 26 6.80	13 47 35.1	2302894	0 12.7	228 32 45.0	1 32 5.4	8597893
26	14 30 57.61	14 13 26.6	2299236	0 13.7	230 8 33.4	1 26 59.5	8598701
27	14 35 49.52	14 38 57.0	2295464	0 14.6	231 44 19.3	1 21 49.7	8599504
28	14 40 42.56	15 4 5.3	2291579	0 15.5	233 20 2.6	1 16 36.2	8600302
29	14 45 36.75	15 28 50.9	2287581	0 16.5	234 55 43.4	1 11 19.2	8601095
30	14 50 32.10	15 53 12.8	2283471	0 17.5	236 31 21.8	1 5 59.1	8601881
31	14 55 28.63	16 17 10.3	2279249	0 18.5	238 6 57.8	1 0 36.0	8602661
Nov. 1	15 0 26.35	16 40 42.6	2274917	0 19.5	239 42 31.4	0 55 10.2	8603432
2	15 5 25.27	17 3 48.8	2270474	0 20.5	241 18 2.7	0 49 42.0	8604196
3	15 10 25.40	17 26 28.2	2265921	0 21.6	242 53 31.7	0 44 11.6	8604951
4	15 15 26.76	17 48 40.0	2261260	0 22.7	244 28 58.5	0 38 39.2	8605697
5	15 20 29.34	18 10 23.3	2256492	0 23.8	246 4 23.2	0 33 5.2	8606433
6	15 25 33.16	18 31 37.5	2251616	0 24.9	247 39 45.7	0 27 29.8	8607159
7	15 30 38.21	18 52 21.7	2246634	0 26.0	249 15 6.2	0 21 53.2	8607874
8	15 35 44.50	19 12 35.3	2241548	0 27.2	250 50 24.7	0 16 15.7	8608577
9	15 40 52.02	19 32 17.3	2236356	0 28.4	252 25 41.3	0 10 37.6	8609269
10	15 46 0.77	19 51 27.2	2231061	0 29.6	254 0 56.0	0 4 59.1	8609948
11	15 51 10.74	20 10 4.1	2225662	0 30.8	255 36 9.0	South. 0 0 39.6	8610614
12	15 56 21.93	20 28 7.4	2220160	0 32.1	257 11 20.2	0 6 18.1	8611266
13	16 1 34.32	20 45 36.2	2214554	0 33.3	258 46 29.7	0 11 56.2	8611904
14	16 6 47.90	21 2 30.0	2208844	0 34.6	260 21 37.7	0 17 33.7	8612528
15	16 12 2.65	21 18 48.0	2203029	0 35.9	261 56 44.2	0 23 10.3	8613137
16	16 17 18.55	21 34 29.5	2197110	0 37.2	263 31 49.2	0 28 45.7	8613730
17	16 22 35.57	21 49 33.8	2191085	0 38.6	265 6 52.8	0 34 19.7	8614308
18	16 27 53.69	22 4 0.4	2184954	0 39.9	266 41 55.1	0 39 52.0	8614869
19	16 33 12.88	22 17 48.6	2178716	0 41.3	268 16 56.2	0 45 22.5	8615413
20	16 38 33.10	22 30 57.7	2172371	0 42.7	269 51 56.1	0 50 56.6	8615940
21	16 43 54.31	22 43 27.2	2165917	0 44.1	271 26 54.9	0 56 16.6	8616450
22	16 49 16.47	22 55 16.5	2159355	0 45.5	273 1 52.7	1 1 39.8	8616942
23	16 54 39.55	23 6 25.1	2152683	0 47.0	274 36 49.5	1 7 0.1	8617416

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				South.			
	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	["]	["]
Oct. 13	13 29 14.26	+11.65	0.32	8 14 44.3	-72.9	4.8	5.0
14	13 33 54.15	11.68	0.32	8 43 47.7	72.4	4.8	5.0
15	13 38 34.77	11.71	0.32	9 12 39.6	71.9	4.8	5.0
16	13 43 16.16	11.74	0.32	9 41 19.1	71.4	4.8	5.0
17	13 47 58.36	11.77	0.32	10 9 45.5	70.8	4.8	5.0
18	13 52 41.41	11.81	0.32	10 37 58.0	70.2	4.8	5.0
19	13 57 25.35	11.85	0.33	11 5 55.8	69.6	4.8	5.0
20	14 2 10.21	11.89	0.33	11 33 38.1	68.9	4.8	5.0
21	14 6 56.02	11.93	0.33	12 1 4.2	68.2	4.8	5.0
22	14 11 42.81	11.97	0.33	12 28 13.1	67.5	4.8	5.0
23	14 16 30.62	12.01	0.33	12 55 4.0	66.7	4.8	5.0
24	14 21 19.46	12.06	0.33	13 21 36.2	65.9	4.8	5.0
25	14 26 9.37	12.10	0.33	13 47 48.9	65.1	4.8	5.0
26	14 31 0.37	12.15	0.33	14 13 41.2	64.2	4.8	5.0
27	14 35 52.48	12.19	0.33	14 39 12.4	63.3	4.8	5.0
28	14 40 45.73	12.24	0.33	15 4 21.5	62.4	4.8	5.0
29	14 45 40.12	12.29	0.33	15 29 7.8	61.4	4.8	5.0
30	14 50 35.69	12.34	0.34	15 53 30.4	60.4	4.9	5.1
31	14 55 32.44	12.39	0.34	16 17 28.6	59.4	4.9	5.1
Nov. 1	15 0 30.39	12.44	0.34	16 41 1.5	58.3	4.9	5.1
2	15 5 29.54	12.49	0.34	17 4 8.4	57.2	4.9	5.1
3	15 10 29.91	12.54	0.34	17 26 48.4	56.1	4.9	5.1
4	15 15 31.51	12.59	0.34	17 49 0.7	54.9	4.9	5.1
5	15 20 34.34	12.64	0.34	18 10 44.6	53.7	4.9	5.1
6	15 25 38.42	12.69	0.34	18 31 59.3	52.5	4.9	5.1
7	15 30 43.73	12.75	0.34	18 52 44.0	51.2	4.9	5.1
8	15 35 50.29	12.80	0.34	19 12 57.9	49.9	4.9	5.1
9	15 40 58.09	12.85	0.34	19 32 40.3	48.5	4.9	5.1
10	15 46 7.12	12.90	0.34	19 51 50.5	47.2	4.9	5.1
11	15 51 17.39	12.95	0.34	20 10 27.6	45.8	4.9	5.1
12	15 56 28.87	13.00	0.34	20 28 31.1	44.4	4.9	5.1
13	16 1 41.56	13.05	0.35	20 46 0.1	42.9	5.0	5.2
14	16 6 55.45	13.10	0.35	21 2 53.9	41.5	5.0	5.2
15	16 12 10.51	13.15	0.35	21 19 11.9	40.0	5.0	5.2
16	16 17 26.73	13.20	0.35	21 34 53.3	38.4	5.0	5.2
17	16 22 44.08	13.25	0.35	21 49 57.5	36.8	5.0	5.2
18	16 28 2.53	13.30	0.36	22 4 23.9	35.2	5.0	5.2
19	16 33 22.05	13.34	0.36	22 18 11.8	33.5	5.0	5.2
20	16 38 42.61	13.38	0.36	22 31 20.5	31.9	5.0	5.2
21	16 44 4.16	13.42	0.36	22 43 49.5	30.3	5.0	5.2
22	16 49 26.67	13.46	0.36	22 55 38.3	28.7	5.0	5.2
23	16 54 50.10	+13.49	0.36	23 6 46.2	-27.0	5.0	5.2

MEAN TIME.								
Month and Day.	Geocentric.				Heliocentric.			
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
	<div>h m s</div>	<div>South. ° ' "</div>	<div>°</div>		<div>h m</div>	<div>South. ° ' "</div>	<div>9</div>	
Nov. 23	16 54 39.55	23 6 25.1	.2152683	0 47.0	274 36 49.5	1 7 0.1	.8617416	
24	17 0 3.49	23 16 52.4	.2145900	0 48.4	276 11 45.5	1 12 17.3	.8617871	
25	17 5 28.24	23 26 38.0	.2139007	0 49.9	277 46 40.6	1 17 31.1	.8618307	
26	17 10 53.75	23 35 41.4	.2132003	0 51.4	279 21 35.0	1 22 41.3	.8618723	
27	17 16 19.97	23 44 2.1	.2124888	0 52.9	280 56 28.7	1 27 47.7	.8619121	
28	17 21 46.84	23 51 39.7	.2117661	0 54.4	282 31 21.9	1 32 50.0	.8619498	
29	17 27 14.30	23 58 33.9	.2110323	0 55.9	284 6 14.6	1 37 48.0	.8619855	
30	17 32 42.29	24 4 44.3	.2102873	0 57.5	285 41 6.8	1 42 41.5	.8620192	
Dec. 1	17 38 10.75	24 10 10.7	.2095312	0 59.0	287 15 58.7	1 47 30.3	.8620508	
2	17 43 39.61	24 14 52.7	.2087640	1 0.5	288 50 50.3	1 52 14.1	.8620803	
3	17 49 8.81	24 18 50.2	.2079857	1 2.1	290 25 41.6	1 56 52.7	.8621077	
4	17 54 38.29	24 22 2.9	.2071964	1 3.6	292 0 32.8	2 1 26.0	.8621330	
5	18 0 7.98	24 24 30.7	.2063961	1 5.2	293 35 23.9	2 5 53.7	.8621561	
6	18 5 37.82	24 26 13.4	.2055848	1 6.7	295 10 14.9	2 10 15.7	.8621771	
7	18 11 7.73	24 27 11.0	.2047626	1 8.3	296 45 6.0	2 14 31.7	.8621958	
8	18 16 37.65	24 27 23.3	.2039296	1 9.9	298 19 57.1	2 18 41.5	.8622124	
9	18 22 7.51	24 26 50.4	.2030858	1 11.4	299 54 48.4	2 22 45.0	.8622267	
10	18 27 37.25	24 25 32.2	.2022311	1 13.0	301 29 39.8	2 26 41.9	.8622389	
11	18 33 6.81	24 23 28.8	.2013656	1 14.5	303 4 31.5	2 30 32.2	.8622488	
12	18 38 36.11	24 20 40.2	.2004891	1 16.1	304 39 23.6	2 34 15.6	.8622564	
13	18 44 5.10	24 17 6.6	.1996017	1 17.6	306 14 16.0	2 37 51.9	.8622618	
14	18 49 33.71	24 12 48.1	.1987032	1 19.1	307 49 8.8	2 41 21.0	.8622650	
15	18 55 1.89	24 7 44.9	.1977935	1 20.7	309 24 2.1	2 44 42.8	.8622659	
16	19 0 29.56	24 1 57.2	.1968725	1 22.2	310 58 55.9	2 47 57.0	.8622646	
17	19 5 56.68	23 55 25.2	.1959401	1 23.7	312 33 50.3	2 51 3.6	.8622610	
18	19 11 23.17	23 48 9.2	.1949961	1 25.2	314 8 45.4	2 54 2.4	.8622552	
19	19 16 48.98	23 40 9.5	.1940405	1 26.7	315 43 41.1	2 56 53.2	.8622471	
20	19 22 14.05	23 31 26.4	.1930731	1 28.2	317 18 37.6	2 59 35.9	.8622368	
21	19 27 38.33	23 22 0.4	.1920938	1 29.6	318 53 34.8	3 2 10.5	.8622243	
22	19 33 1.75	23 11 51.8	.1911025	1 31.1	320 28 32.8	3 4 36.7	.8622096	
23	19 38 24.27	23 1 1.0	.1900989	1 32.5	322 3 31.6	3 6 54.5	.8621926	
24	19 43 45.84	22 49 28.6	.1890830	1 33.9	323 38 31.3	3 9 3.8	.8621735	
25	19 49 6.41	22 37 15.0	.1880546	1 35.3	325 13 31.9	3 11 4.4	.8621522	
26	19 54 25.92	22 24 20.7	.1870136	1 36.7	326 48 33.4	3 12 56.3	.8621287	
27	19 59 44.35	22 10 46.4	.1859600	1 38.1	328 23 36.0	3 14 39.4	.8621030	
28	20 5 1.64	21 56 32.5	.1848936	1 39.4	329 58 39.5	3 16 13.6	.8620753	
29	20 10 17.76	21 41 39.8	.1838143	1 40.7	331 33 44.0	3 17 38.9	.8620454	
30	20 15 32.68	21 26 8.8	.1827222	1 42.0	333 8 49.7	3 18 55.1	.8620134	
31	20 20 46.36	21 10 0.1	.1816172	1 43.3	334 43 56.4	3 20 2.2	.8619794	
32	20 25 58.77	20 53 14.4	.1804992	1 44.6	336 19 4.2	3 21 0.1	.8619433	

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	^h ^m ^s	^s	^s	<i>South.</i> [°] ['] ["]	["]	["]	["]
Nov. 23	16 54 50.10	+13.49	0.36	23 6 46.2	-27.0	5.0	5.2
24	17 0 14.40	13.53	0.36	23 17 12.8	25.3	5.0	5.2
25	17 5 39.51	13.56	0.36	23 26 57.6	23.5	5.0	5.2
26	17 11 5.38	13.59	0.37	23 36 0.0	21.7	5.1	5.3
27	17 16 31.97	13.62	0.37	23 44 19.6	19.9	5.1	5.3
28	17 21 59.20	13.65	0.37	23 51 56.1	18.1	5.1	5.3
29	17 27 27.02	13.67	0.37	23 58 49.1	16.3	5.1	5.3
30	17 32 55.38	13.69	0.37	24 4 58.2	14.5	5.1	5.3
Dec. 1	17 38 24.21	13.71	0.37	24 10 23.1	12.6	5.1	5.3
2	17 43 53.44	13.73	0.37	24 15 3.6	10.8	5.1	5.3
3	17 49 23.01	13.74	0.37	24 18 59.4	8.9	5.1	5.3
4	17 54 52.85	13.75	0.37	24 22 10.4	7.1	5.1	5.3
5	18 0 22.91	13.75	0.37	24 24 36.3	5.2	5.1	5.3
6	18 5 53.11	13.76	0.37	24 26 17.1	3.3	5.1	5.3
7	18 11 23.38	13.76	0.38	24 27 12.6	-1.4	5.2	5.4
8	18 16 53.66	13.76	0.38	24 27 22.8	+0.5	5.2	5.4
9	18 22 23.87	13.76	0.38	24 26 47.5	2.4	5.2	5.4
10	18 27 53.96	13.75	0.38	24 25 27.0	4.3	5.2	5.4
11	18 33 23.85	13.74	0.38	24 23 21.1	6.2	5.2	5.4
12	18 38 53.49	13.73	0.38	24 20 30.0	8.1	5.2	5.4
13	18 44 22.82	13.72	0.38	24 16 53.8	10.0	5.2	5.4
14	18 49 51.76	13.70	0.38	24 12 32.6	11.8	5.2	5.4
15	18 55 20.25	13.68	0.38	24 7 26.6	13.7	5.2	5.4
16	19 0 48.25	13.65	0.39	24 1 36.0	15.5	5.3	5.5
17	19 6 15.67	13.63	0.39	23 55 1.1	17.4	5.3	5.5
18	19 11 42.46	13.60	0.39	23 47 42.0	19.2	5.3	5.5
19	19 17 8.57	13.57	0.39	23 39 39.2	21.0	5.3	5.5
20	19 22 33.93	13.54	0.39	23 30 53.0	22.8	5.3	5.5
21	19 27 58.48	13.51	0.39	23 21 23.7	24.6	5.3	5.5
22	19 33 22.17	13.47	0.39	23 11 11.8	26.4	5.3	5.5
23	19 38 44.96	13.43	0.39	23 0 17.8	28.2	5.3	5.5
24	19 44 6.78	13.39	0.39	22 48 42.0	29.9	5.4	5.6
25	19 49 27.59	13.35	0.39	22 36 24.9	31.6	5.4	5.6
26	19 54 47.34	13.30	0.39	22 23 27.2	33.2	5.4	5.6
27	20 0 5.99	13.25	0.39	22 9 49.4	34.9	5.4	5.6
28	20 5 23.50	13.20	0.39	21 55 32.1	36.5	5.4	5.6
29	20 10 39.83	13.15	0.39	21 40 35.8	38.1	5.4	5.6
30	20 15 54.95	13.10	0.39	21 25 1.3	39.7	5.4	5.6
31	20 21 8.82	13.05	0.39	21 8 49.1	41.3	5.4	5.6
32	20 26 21.41	+13.00	0.39	20 51 59.9	+42.9	5.5	5.7

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.			
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
Jan.		South.	°		h m	° ' "	South.	°
	h m s	° ' "			° ' "			
	1 22 36 44.35	9 44 18.1	2273408	3 54.1	12 44 31.9	1 4 47.9	1488746	
	2 22 39 34.04	9 26 25.6	2290195	3 53.0	13 21 7.4	1 3 50.0	1491308	
	3 22 42 23.44	9 8 28.8	2306931	3 51.9	13 57 40.3	1 2 51.8	1493902	
	4 22 45 12.55	8 50 27.9	2323614	3 50.8	14 34 10.5	1 1 53.2	1496526	
	5 22 48 1.35	8 32 23.0	2340244	3 49.6	15 10 38.1	1 0 54.2	1499181	
	6 22 50 49.87	8 14 14.4	2356819	3 48.5	15 47 2.9	0 59 55.0	1501866	
	7 22 53 38.11	7 56 2.3	2373338	3 47.4	16 23 25.0	0 58 55.4	1504581	
	8 22 56 26.06	7 37 46.8	2389802	3 46.2	16 59 44.3	0 57 55.4	1507325	
	9 22 59 13.73	7 19 28.3	2406210	3 45.1	17 36 0.9	0 56 55.2	1510098	
	10 23 2 1.14	7 1 6.8	2422562	3 43.9	18 12 14.6	0 55 54.6	1512899	
	11 23 4 48.27	6 42 42.6	2438858	3 42.8	18 48 25.5	0 54 53.8	1515728	
	12 23 7 35.14	6 24 15.9	2455098	3 41.6	19 24 33.5	0 53 52.7	1518585	
	13 23 10 21.75	6 5 46.9	2471282	3 40.4	20 0 38.6	0 52 51.3	1521469	
	14 23 13 8.10	5 47 15.8	2487410	3 39.3	20 36 40.8	0 51 49.7	1524380	
	15 23 15 54.21	5 28 42.7	2503483	3 38.1	21 12 40.0	0 50 47.8	1527317	
	16 23 18 40.07	5 10 7.9	2519501	3 36.9	21 48 36.3	0 49 45.6	1530280	
	17 23 21 25.70	4 51 31.5	2535465	3 35.7	22 24 29.6	0 48 43.2	1533268	
	18 23 24 11.11	4 32 53.7	2551375	3 34.5	23 0 20.0	0 47 40.6	1536282	
	19 23 26 56.30	4 14 14.7	2567232	3 33.4	23 36 7.3	0 46 37.8	1539321	
	20 23 29 41.27	3 55 34.6	2583035	3 32.2	24 11 51.5	0 45 34.7	1542383	
	21 23 32 26.05	3 36 53.5	2598785	3 31.0	24 47 32.7	0 44 31.5	1545470	
	22 23 35 10.63	3 18 11.7	2614481	3 29.8	25 23 10.8	0 43 28.0	1548580	
	23 23 37 55.04	2 59 29.3	2630124	3 28.6	25 58 45.9	0 42 24.3	1551714	
	24 23 40 39.26	2 40 46.5	2645713	3 27.4	26 34 17.8	0 41 20.5	1554870	
	25 23 43 23.33	2 22 3.3	2661250	3 26.2	27 9 46.6	0 40 16.5	1558049	
	26 23 46 7.24	2 3 20.0	2676731	3 24.9	27 45 12.3	0 39 12.3	1561249	
	27 23 48 51.01	1 44 36.7	2692157	3 23.7	28 20 34.8	0 38 8.0	1564471	
	28 23 51 34.64	1 25 53.7	2707527	3 22.5	28 55 54.1	0 37 3.5	1567714	
	29 23 54 18.14	1 7 10.9	2722838	3 21.3	29 31 10.3	0 35 58.8	1570977	
30 23 57 1.52	0 48 28.7	2738091	3 20.1	30 6 23.2	0 34 54.1	1574261		
31 23 59 44.79	0 29 47.1	2753284	3 18.9	30 41 32.9	0 33 49.2	1577566		
Feb. 1	0 2 27.96	0 11 6.5	2768415	3 17.7	31 16 39.5	0 32 44.2	1580880	
		North.						
	2 0 5 11.03	0 7 33.2	2783485	3 16.4	31 51 42.7	0 31 39.1	1584228	
	3 0 7 54.00	0 26 11.7	2798493	3 15.2	32 26 42.7	0 30 33.9	1587588	
	4 0 10 36.90	0 44 48.8	2813437	3 14.0	33 1 39.4	0 29 28.7	1590966	
	5 0 13 19.71	1 3 24.3	2828318	3 12.7	33 36 32.9	0 28 23.3	1594361	
	6 0 16 2.45	1 21 58.1	2843133	3 11.5	34 11 23.1	0 27 17.9	1597774	
	7 0 18 45.12	1 40 30.0	2857883	3 10.3	34 46 9.9	0 26 12.4	1601203	
	8 0 21 27.72	1 58 59.9	2872569	3 9.0	35 20 53.5	0 25 6.9	1604649	
	9 0 24 10.27	2 17 27.5	2887189	3 7.8	35 55 33.7	0 24 1.3	1608110	
	10 0 26 52.77	2 35 52.7	2901744	3 6.6	36 30 10.6	0 22 55.7	1611587	
	11 0 29 35.22	2 54 15.3	2916233	3 5.3	37 4 44.2	0 21 50.0	1615079	

AT TRANSIT OVER THE MERIDIAN OF GREENWICH

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
<i>South.</i>							
Jan. 1	h m s 22 37 11.96	+ 7.07	0.18	9 41 24.0	+44.6	2.6	5.1
2	22 40 1.47	7.06	0.18	9 23 31.6	44.7	2.6	5.1
3	22 42 50.70	7.05	0.18	9 5 35.0	44.9	2.6	5.1
4	22 45 39.62	7.04	0.18	8 47 34.3	45.0	2.6	5.1
5	22 48 28.25	7.03	0.18	8 29 29.6	45.1	2.6	5.0
6	22 51 16.59	7.02	0.17	8 11 21.3	45.3	2.6	5.0
7	22 54 4.64	7.00	0.17	7 53 9.5	45.4	2.6	5.0
8	22 56 52.42	6.99	0.17	7 34 54.4	45.6	2.6	5.0
9	22 59 39.92	6.98	0.17	7 16 36.3	45.7	2.5	4.9
10	23 2 27.14	6.97	0.17	6 58 15.3	45.8	2.5	4.9
11	23 5 14.10	6.96	0.17	6 39 51.6	45.9	2.5	4.9
12	23 8 0.80	6.95	0.17	6 21 25.4	46.1	2.5	4.9
13	23 10 47.23	6.94	0.17	6 2 57.0	46.2	2.5	4.9
14	23 13 33.41	6.93	0.17	5 44 26.4	46.3	2.5	4.9
15	23 16 19.34	6.92	0.17	5 25 54.0	46.4	2.5	4.9
16	23 19 5.04	6.91	0.16	5 7 19.9	46.5	2.5	4.8
17	23 21 50.50	6.90	0.16	4 48 44.1	46.5	2.5	4.8
18	23 24 35.74	6.89	0.16	4 30 7.1	46.6	2.5	4.8
19	23 27 20.75	6.88	0.16	4 11 28.8	46.6	2.5	4.8
20	23 30 5.56	6.87	0.16	3 52 49.4	46.6	2.5	4.8
21	23 32 50.17	6.86	0.16	3 34 9.2	46.7	2.5	4.8
22	23 35 34.59	6.85	0.16	3 15 28.3	46.7	2.4	4.7
23	23 38 18.83	6.84	0.16	2 56 46.7	46.7	2.4	4.7
24	23 41 2.90	6.83	0.16	2 38 4.8	46.8	2.4	4.7
25	23 43 46.80	6.82	0.16	2 19 22.5	46.8	2.4	4.7
26	23 46 30.56	6.81	0.16	2 0 40.1	46.8	2.4	4.7
27	23 49 14.17	6.80	0.16	1 41 57.8	46.8	2.4	4.7
28	23 51 57.64	6.80	0.16	1 23 15.7	46.7	2.4	4.7
29	23 54 40.99	6.80	0.16	1 4 34.0	46.7	2.4	4.6
30	23 57 24.21	6.79	0.15	0 45 52.8	46.7	2.4	4.6
31	0 0 7.33	6.79	0.15	0 27 12.3	46.7	2.4	4.6
Feb. 1	0 2 50.35	6.79	0.15	0 8 32.7	46.6	2.4	4.6
<i>North.</i>							
2	0 5 33.26	6.79	0.15	0 10 5.9	46.6	2.4	4.6
3	0 8 16.09	6.78	0.15	0 28 43.2	46.5	2.4	4.6
4	0 10 58.83	6.78	0.15	0 47 19.1	46.5	2.3	4.5
5	0 13 41.50	6.78	0.15	1 5 53.5	46.4	2.3	4.5
6	0 16 24.09	6.78	0.15	1 24 26.1	46.3	2.3	4.5
7	0 19 6.61	6.77	0.15	1 42 56.8	46.2	2.3	4.5
8	0 21 49.07	6.77	0.15	2 1 25.4	46.1	2.3	4.5
9	0 24 31.47	6.77	0.15	2 19 51.8	46.0	2.3	4.4
10	0 27 13.82	6.76	0.15	2 38 15.7	45.9	2.3	4.4
11	0 29 56.13	+ 6.76	0.15	2 56 37.0	+45.8	2.3	4.4

MEAN TIME.																	
Month and Day.		Geocentric.					Heliocentric.										
		Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.									
		Noon.	Noon.	Noon.		Noon.	Noon.	Noon.									
		North.		°		South.		°									
		h	m	s	°	'	"	h	m	s	°	'	"				
Feb.	11	0	29	35.22	2	54	15.3	2916233	3	5.3	37	4	44.2	0	21	50.0	1615079
	12	0	32	17.63	3	12	35.1	2930657	3	4.1	37	39	14.4	0	20	44.3	1618585
	13	0	35	0.01	3	30	52.1	2945015	3	2.9	38	13	41.2	0	19	38.6	1622106
	14	0	37	42.36	3	49	6.0	2959310	3	1.7	38	48	4.7	0	18	32.9	1625641
	15	0	40	24.69	4	7	16.7	2973540	3	0.4	39	22	24.9	0	17	27.2	1629188
	16	0	43	7.01	4	25	24.0	2987706	2	59.2	39	56	41.6	0	16	21.5	1632749
	17	0	45	49.33	4	43	27.9	3001808	2	57.9	40	30	55.0	0	15	15.8	1636322
	18	0	48	31.65	5	1	28.1	3015849	2	56.7	41	5	5.0	0	14	10.1	1639907
	19	0	51	13.99	5	19	24.6	3029826	2	55.5	41	39	11.6	0	13	4.4	1643504
	20	0	53	56.35	5	37	17.2	3043738	2	54.2	42	13	14.8	0	11	58.8	1647112
	21	0	56	38.74	5	55	5.8	3057587	2	53.0	42	47	14.7	0	10	53.2	1650731
	22	0	59	21.17	6	12	50.2	3071370	2	51.8	43	21	11.1	0	9	47.6	1654360
	23	1	2	3.64	6	30	30.3	3085088	2	50.5	43	55	4.1	0	8	42.1	1658000
	24	1	4	46.17	6	48	6.0	3098743	2	49.3	44	28	53.6	0	7	36.7	1661649
	25	1	7	28.77	7	5	37.2	3112333	2	48.1	45	2	39.8	0	6	31.3	1665307
	26	1	10	11.43	7	23	3.7	3125855	2	46.8	45	36	22.5	0	5	26.0	1668974
	27	1	12	54.17	7	40	25.4	3139310	2	45.6	46	10	1.9	0	4	20.7	1672650
	28	1	15	37.00	7	57	42.0	3152697	2	44.4	46	43	37.8	0	3	15.6	1676334
Mar.	1	1	18	19.92	8	14	53.6	3166014	2	43.1	47	17	10.2	0	2	10.5	1680025
	2	1	21	2.94	8	31	59.9	3179261	2	41.9	47	50	39.2	0	1	5.5	1683724
	3	1	23	46.06	8	49	0.8	3192437	2	40.7	48	24	4.8	0	0	0.7	1687429
	4	1	26	29.29	9	5	56.2	3205540	2	39.5	48	57	27.0	0	1	4.0	1691141
	5	1	29	12.63	9	22	45.9	3218571	2	38.3	49	30	45.7	0	2	8.7	1694859
	6	1	31	56.08	9	39	29.7	3231528	2	37.1	50	4	1.0	0	3	13.2	1698583
	7	1	34	39.65	9	56	7.5	3244412	2	35.8	50	37	12.9	0	4	17.5	1702313
	8	1	37	23.35	10	12	39.2	3257219	2	34.6	51	10	21.3	0	5	21.8	1706047
	9	1	40	7.17	10	29	4.6	3269952	2	33.4	51	43	26.4	0	6	25.8	1709786
	10	1	42	51.12	10	45	23.6	3282611	2	32.2	52	16	28.0	0	7	20.8	1713529
	11	1	45	35.20	11	1	36.0	3295195	2	31.0	52	49	26.2	0	8	33.6	1717276
	12	1	48	19.42	11	17	41.8	3307704	2	29.8	53	22	21.0	0	9	37.2	1721026
	13	1	51	3.78	11	33	40.7	3320139	2	28.6	53	55	12.4	0	10	40.7	1724780
	14	1	53	48.28	11	49	32.7	3332500	2	27.4	54	28	0.4	0	11	44.0	1728536
	15	1	56	32.93	12	5	17.6	3344788	2	26.2	55	0	45.0	0	12	47.2	1732295
	16	1	59	17.74	12	20	55.4	3357002	2	25.0	55	33	26.3	0	13	50.1	1736056
	17	2	2	2.70	12	36	25.8	3369144	2	23.8	56	6	4.1	0	14	52.9	1739819
	18	2	4	47.82	12	51	48.8	3381212	2	22.6	56	38	38.6	0	15	55.5	1743582
	19	2	7	33.11	13	7	4.2	3393208	2	21.4	57	11	9.6	0	16	57.9	1747347
	20	2	10	18.57	13	22	11.9	3405132	2	20.3	57	43	37.3	0	18	0.1	1751113
	21	2	13	4.21	13	37	11.9	3416983	2	19.1	58	16	1.7	0	19	2.1	1754879
	22	2	15	50.03	13	52	4.0	3428762	2	17.9	58	48	22.7	0	20	3.8	1758645
	23	2	18	36.04	14	6	48.0	3440467	2	16.7	59	20	40.3	0	21	5.4	1762411
	24	2	21	22.24	14	21	24.0	3452099	2	15.5	59	52	54.6	0	22	6.8	1766176

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
Feb. 11	^h 0 29 56 ^m 13 ^s	+ 6 ^s 76	0 ^s 15	2 56 37 ^o 0	+45 ^o 8	2 ^o 3	4 ^o 4
12	0 32 38 ^m 39 ^s	6 ^s 76	0 ^s 15	3 14 55 ^o 6	45 ^o 7	2 ^o 3	4 ^o 4
13	0 35 20 ^m 63 ^s	6 ^s 76	0 ^s 15	3 33 11 ^o 2	45 ^o 6	2 ^o 3	4 ^o 4
14	0 38 2 ^m 83 ^s	6 ^s 76	0 ^s 15	3 51 23 ^o 7	45 ^o 5	2 ^o 3	4 ^o 4
15	0 40 45 ^m 02 ^s	6 ^s 76	0 ^s 15	4 9 33 ^o 1	45 ^o 4	2 ^o 3	4 ^o 4
16	0 43 27 ^m 21 ^s	6 ^s 76	0 ^s 15	4 27 39 ^o 1	45 ^o 3	2 ^o 3	4 ^o 3
17	0 46 9 ^m 39 ^s	6 ^s 76	0 ^s 15	4 45 41 ^o 6	45 ^o 2	2 ^o 3	4 ^o 3
18	0 48 51 ^m 57 ^s	6 ^s 77	0 ^s 15	5 3 40 ^o 4	45 ^o 0	2 ^o 3	4 ^o 3
19	0 51 33 ^m 77 ^s	6 ^s 77	0 ^s 15	5 21 35 ^o 5	44 ^o 8	2 ^o 3	4 ^o 3
20	0 54 15 ^m 99 ^s	6 ^s 77	0 ^s 15	5 39 26 ^o 7	44 ^o 6	2 ^o 3	4 ^o 3
21	0 56 58 ^m 25 ^s	6 ^s 77	0 ^s 15	5 57 13 ^o 9	44 ^o 4	2 ^o 2	4 ^o 2
22	0 59 40 ^m 54 ^s	6 ^s 77	0 ^s 15	6 14 56 ^o 9	44 ^o 2	2 ^o 2	4 ^o 2
23	1 2 22 ^m 88 ^s	6 ^s 77	0 ^s 15	6 32 35 ^o 6	44 ^o 0	2 ^o 2	4 ^o 2
24	1 5 5 ^m 28 ^s	6 ^s 77	0 ^s 15	6 50 9 ^o 9	43 ^o 8	2 ^o 2	4 ^o 2
25	1 7 47 ^m 75 ^s	6 ^s 78	0 ^s 15	7 7 39 ^o 6	43 ^o 6	2 ^o 2	4 ^o 2
26	1 10 30 ^m 28 ^s	6 ^s 78	0 ^s 15	7 25 4 ^o 6	43 ^o 4	2 ^o 1	4 ^o 1
27	1 13 12 ^m 89 ^s	6 ^s 79	0 ^s 15	7 42 24 ^o 8	43 ^o 2	2 ^o 1	4 ^o 1
28	1 15 55 ^m 59 ^s	6 ^s 79	0 ^s 15	7 59 40 ^o 0	43 ^o 0	2 ^o 1	4 ^o 1
Mar. 1	1 18 38 ^m 38 ^s	6 ^s 79	0 ^s 15	8 16 50 ^o 1	42 ^o 8	2 ^o 1	4 ^o 1
2	1 21 21 ^m 28 ^s	6 ^s 80	0 ^s 15	8 33 55 ^o 0	42 ^o 6	2 ^o 1	4 ^o 1
3	1 24 4 ^m 27 ^s	6 ^s 80	0 ^s 15	8 50 54 ^o 4	42 ^o 4	2 ^o 1	4 ^o 1
4	1 26 47 ^m 37 ^s	6 ^s 80	0 ^s 15	9 7 48 ^o 3	42 ^o 2	2 ^o 1	4 ^o 1
5	1 29 30 ^m 58 ^s	6 ^s 81	0 ^s 15	9 24 36 ^o 5	42 ^o 0	2 ^o 1	4 ^o 0
6	1 32 13 ^m 92 ^s	6 ^s 81	0 ^s 14	9 41 18 ^o 8	41 ^o 7	2 ^o 1	4 ^o 0
7	1 34 57 ^m 36 ^s	6 ^s 81	0 ^s 14	9 57 55 ^o 1	41 ^o 4	2 ^o 1	4 ^o 0
8	1 37 40 ^m 93 ^s	6 ^s 82	0 ^s 14	10 14 25 ^o 3	41 ^o 1	2 ^o 1	4 ^o 0
9	1 40 24 ^m 63 ^s	6 ^s 82	0 ^s 14	10 30 49 ^o 2	40 ^o 8	2 ^o 1	4 ^o 0
10	1 43 8 ^m 45 ^s	6 ^s 83	0 ^s 14	10 47 6 ^o 7	40 ^o 5	2 ^o 1	4 ^o 0
11	1 45 52 ^m 41 ^s	6 ^s 83	0 ^s 14	11 3 17 ^o 6	40 ^o 2	2 ^o 1	4 ^o 0
12	1 48 36 ^m 51 ^s	6 ^s 84	0 ^s 14	11 19 21 ^o 8	40 ^o 0	2 ^o 1	4 ^o 0
13	1 51 20 ^m 75 ^s	6 ^s 84	0 ^s 14	11 35 19 ^o 3	39 ^o 7	2 ^o 1	4 ^o 0
14	1 54 5 ^m 13 ^s	6 ^s 85	0 ^s 14	11 51 9 ^o 7	39 ^o 4	2 ^o 0	3 ^o 9
15	1 56 49 ^m 66 ^s	6 ^s 86	0 ^s 14	12 6 53 ^o 2	39 ^o 1	2 ^o 0	3 ^o 9
16	1 59 34 ^m 34 ^s	6 ^s 86	0 ^s 14	12 22 29 ^o 4	38 ^o 8	2 ^o 0	3 ^o 9
17	2 2 19 ^m 18 ^s	6 ^s 87	0 ^s 14	12 37 58 ^o 3	38 ^o 5	2 ^o 0	3 ^o 9
18	2 5 4 ^m 19 ^s	6 ^s 87	0 ^s 14	12 53 19 ^o 8	38 ^o 2	2 ^o 0	3 ^o 9
19	2 7 49 ^m 35 ^s	6 ^s 88	0 ^s 14	13 8 33 ^o 7	37 ^o 9	2 ^o 0	3 ^o 9
20	2 10 34 ^m 70 ^s	6 ^s 89	0 ^s 14	13 23 39 ^o 9	37 ^o 6	2 ^o 0	3 ^o 9
21	2 13 20 ^m 22 ^s	6 ^s 90	0 ^s 14	13 38 38 ^o 4	37 ^o 3	2 ^o 0	3 ^o 9
22	2 16 5 ^m 92 ^s	6 ^s 91	0 ^s 14	13 53 29 ^o 0	37 ^o 0	2 ^o 0	3 ^o 8
23	2 18 51 ^m 81 ^s	6 ^s 92	0 ^s 14	14 8 11 ^o 5	36 ^o 7	2 ^o 0	3 ^o 8
24	2 21 37 ^m 90 ^s	+ 6 ^s 93	0 ^s 14	14 22 46 ^o 1	+36 ^o 3	2 ^o 0	3 ^o 8

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North. ° ' "</i>	<i>°</i>
Mar. 24	2 21 22.24	14 21 24.0	3452099	2 15.5	59 52 54.6	0 22 6.8	1766176
25	2 24 8.64	14 35 51.8	3463657	2 14.4	60 25 5.5	0 23 7.9	1769940
26	2 26 55.24	14 50 11.3	3475142	2 13.2	60 57 13.1	0 24 8.8	1773703
27	2 29 42.04	15 4 22.4	3486551	2 12.0	61 29 17.3	0 25 9.5	1777464
28	2 32 29.05	15 18 25.0	3497884	2 10.9	62 1 18.3	0 26 9.9	1781223
29	2 35 16.27	15 32 18.9	3509141	2 9.7	62 33 15.9	0 27 10.1	1784980
30	2 38 3 70	15 46 4.0	3520320	2 8.6	63 5 10.2	0 28 10.0	1788735
31	2 40 51.34	15 59 40.3	3531420	2 7.4	63 37 1.3	0 29 9.7	1792486
Apr. 1	2 43 39.20	16 13 7.5	3542440	2 6.3	64 8 49.0	0 30 9.2	1796234
2	2 46 27.27	16 26 25.7	3553380	2 5.1	64 40 33.5	0 31 8.4	1799978
3	2 49 15.56	16 39 34.6	3564239	2 4.0	65 12 14.7	0 32 7.3	1803718
4	2 52 4.06	16 52 34.1	3575018	2 2.9	65 43 52.6	0 33 6.0	1807454
5	2 54 52.78	17 5 24.2	3585715	2 1.8	66 15 27.3	0 34 4.4	1811185
6	2 57 41.70	17 18 4.8	3596330	2 0.6	66 46 58.8	0 35 2.5	1814912
7	3 0 30.84	17 30 35.7	3606862	1 59.5	67 18 27.1	0 36 0.4	1818633
8	3 3 20.18	17 42 56.8	3617313	1 58.4	67 49 52.1	0 36 57.9	1822348
9	3 6 9.73	17 55 8.1	3627682	1 57.3	68 21 13.9	0 37 55.2	1826058
10	3 8 59.48	18 7 9.3	3637969	1 56.2	68 52 32.5	0 38 52.2	1829762
11	3 11 49.44	18 19 0.5	3648175	1 55.0	69 23 48.0	0 39 48.9	1833459
12	3 14 39.61	18 30 41.5	3658300	1 53.9	69 55 0.3	0 40 45.4	1837149
13	3 17 29.97	18 42 12.2	3668344	1 52.8	70 26 9.4	0 41 41.5	1840833
14	3 20 20.53	18 53 32.5	3678307	1 51.7	70 57 15.3	0 42 37.3	1844509
15	3 23 11.30	19 4 42.4	3688190	1 50.7	71 28 18.1	0 43 32.8	1848178
16	3 26 2.26	19 15 41.7	3697994	1 49.6	71 59 17.8	0 44 28.0	1851839
17	3 28 53.42	19 26 30.4	3707718	1 48.5	72 30 14.4	0 45 22.9	1855492
18	3 31 44.77	19 37 8.5	3717362	1 47.4	73 1 7.8	0 46 17.5	1859137
19	3 34 36.32	19 47 35.8	3726929	1 46.3	73 31 58.1	0 47 11.8	1862774
20	3 37 28.08	19 57 52.4	3736415	1 45.2	74 2 45.4	0 48 5.7	1866402
21	3 40 20.02	20 7 58.0	3745823	1 44.1	74 33 29.6	0 48 59.3	1870020
22	3 43 12.16	20 17 52.6	3755150	1 43.1	75 4 10.7	0 49 52.6	1873630
23	3 46 4.50	20 27 36.2	3764396	1 42.0	75 34 48.8	0 50 45.6	1877230
24	3 48 57.03	20 37 8.6	3773561	1 40.9	76 5 23.9	0 51 38.2	1880820
25	3 51 49.75	20 46 29.8	3782645	1 39.9	76 35 56.0	0 52 30.5	1884400
26	3 54 42.65	20 55 39.8	3791646	1 38.8	77 6 25.0	0 53 22.5	1887970
27	3 57 35.74	21 4 38.4	3800564	1 37.8	77 36 51.1	0 54 14.1	1891529
28	4 0 29.01	21 13 25.6	3809397	1 36.7	78 7 14.2	0 55 5.4	1895077
29	4 3 22.45	21 22 1.3	3818147	1 35.6	78 37 34.4	0 55 56.4	1898614
30	4 6 16.07	21 30 25.5	3826811	1 34.6	79 7 51.6	0 56 47.0	1902140
May 1	4 9 9.85	21 38 38.1	3835389	1 33.5	79 38 5.9	0 57 37.3	1905654
2	4 12 3.80	21 46 38.9	3843880	1 32.5	80 8 17.3	0 58 27.2	1909156
3	4 14 57.89	21 54 28.0	3852284	1 31.5	80 38 25.8	0 59 16.8	1912646
4	4 17 52.13	22 2 5.3	3860602	1 30.4	81 8 31.4	0 0 6.0	1916124

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
Mar. 24	^h 21 ^m 37 ^s 90	+ 6 ^s 93	0 ^s 14	^o 14 ['] 22 ["] 46 ["] 1	+ 36 ["] 3	2 ["] 0	3 ["] 8
25	2 24 24 18	6 ^s 94	0 ^s 14	14 37 12 4	35 ["] 9	2 ["] 0	3 ["] 8
26	2 27 10 66	6 ^s 95	0 ^s 14	14 51 30 4	35 ["] 6	2 ["] 0	3 ["] 8
27	2 29 57 35	6 ^s 95	0 ^s 14	15 5 40 0	35 ["] 2	2 ["] 0	3 ["] 8
28	2 32 44 24	6 ^s 96	0 ^s 14	15 19 41 1	34 ["] 8	2 ["] 0	3 ["] 8
29	2 35 31 35	6 ^s 96	0 ^s 14	15 33 33 6	34 ["] 5	2 ["] 0	3 ["] 8
30	2 38 18 66	6 ^s 97	0 ^s 14	15 47 17 3	34 ["] 2	2 ["] 0	3 ["] 8
31	2 41 6 19	6 ^s 98	0 ^s 14	16 0 52 1	33 ["] 8	2 ["] 0	3 ["] 8
Apr. 1	2 43 53 93	6 ^s 99	0 ^s 14	16 14 17 9	33 ["] 4	2 ["] 0	3 ["] 8
2	2 46 41 89	7 ^s 00	0 ^s 14	16 27 34 6	33 ["] 0	2 ["] 0	3 ["] 8
3	2 49 30 07	7 ^s 01	0 ^s 14	16 40 42 1	32 ["] 6	2 ["] 0	3 ["] 8
4	2 52 18 45	7 ^s 02	0 ^s 14	16 53 40 2	32 ["] 2	2 ["] 0	3 ["] 8
5	2 55 7 05	7 ^s 03	0 ^s 14	17 6 28 9	31 ["] 8	2 ["] 0	3 ["] 8
6	2 57 55 86	7 ^s 04	0 ^s 14	17 19 8 1	31 ["] 4	1 ["] 9	3 ["] 7
7	3 0 44 88	7 ^s 05	0 ^s 14	17 31 37 6	31 ["] 0	1 ["] 9	3 ["] 7
8	3 3 34 11	7 ^s 06	0 ^s 14	17 43 57 3	30 ["] 6	1 ["] 9	3 ["] 7
9	3 6 23 54	7 ^s 06	0 ^s 14	17 56 7 2	30 ["] 2	1 ["] 9	3 ["] 7
10	3 9 13 19	7 ^s 07	0 ^s 13	18 8 7 1	29 ["] 8	1 ["] 9	3 ["] 7
11	3 12 3 03	7 ^s 07	0 ^s 13	18 19 56 9	29 ["] 4	1 ["] 9	3 ["] 7
12	3 14 53 08	7 ^s 08	0 ^s 13	18 31 36 5	29 ["] 0	1 ["] 9	3 ["] 7
13	3 17 43 33	7 ^s 09	0 ^s 13	18 43 5 8	28 ["] 5	1 ["] 9	3 ["] 7
14	3 20 33 78	7 ^s 10	0 ^s 13	18 54 24 8	28 ["] 1	1 ["] 9	3 ["] 7
15	3 23 24 42	7 ^s 11	0 ^s 13	19 5 33 4	27 ["] 6	1 ["] 9	3 ["] 7
16	3 26 15 27	7 ^s 12	0 ^s 13	19 16 31 4	27 ["] 2	1 ["] 9	3 ["] 7
17	3 29 6 32	7 ^s 13	0 ^s 13	19 27 18 9	26 ["] 8	1 ["] 9	3 ["] 7
18	3 31 57 56	7 ^s 14	0 ^s 13	19 37 55 7	26 ["] 3	1 ["] 9	3 ["] 7
19	3 34 49 00	7 ^s 15	0 ^s 13	19 48 21 7	25 ["] 8	1 ["] 9	3 ["] 7
20	3 37 40 63	7 ^s 15	0 ^s 13	19 58 37 0	25 ["] 4	1 ["] 9	3 ["] 6
21	3 40 32 46	7 ^s 16	0 ^s 13	20 8 41 3	24 ["] 9	1 ["] 9	3 ["] 6
22	3 43 24 49	7 ^s 16	0 ^s 13	20 18 34 7	24 ["] 5	1 ["] 9	3 ["] 6
23	3 46 16 71	7 ^s 17	0 ^s 13	20 28 17 1	24 ["] 0	1 ["] 9	3 ["] 6
24	3 49 9 13	7 ^s 17	0 ^s 13	20 37 48 3	23 ["] 5	1 ["] 9	3 ["] 6
25	3 52 1 73	7 ^s 18	0 ^s 13	20 47 8 4	23 ["] 0	1 ["] 9	3 ["] 6
26	3 54 54 52	7 ^s 19	0 ^s 13	20 56 17 1	22 ["] 6	1 ["] 9	3 ["] 6
27	3 57 47 50	7 ^s 20	0 ^s 13	21 5 14 6	22 ["] 2	1 ["] 9	3 ["] 6
28	4 0 40 65	7 ^s 21	0 ^s 13	21 14 0 6	21 ["] 7	1 ["] 9	3 ["] 6
29	4 3 33 98	7 ^s 22	0 ^s 13	21 22 35 2	21 ["] 2	1 ["] 9	3 ["] 6
30	4 6 27 48	7 ^s 23	0 ^s 13	21 30 58 2	20 ["] 7	1 ["] 9	3 ["] 6
May 1	4 9 21 15	7 ^s 23	0 ^s 13	21 39 9 6	20 ["] 2	1 ["] 8	3 ["] 5
2	4 12 14 98	7 ^s 24	0 ^s 13	21 47 9 4	19 ["] 7	1 ["] 8	3 ["] 5
3	4 15 8 96	7 ^s 24	0 ^s 13	21 54 57 5	19 ["] 3	1 ["] 8	3 ["] 5
4	4 18 3 08	+ 7 ^s 25	0 ^s 13	22 2 33 7	+ 18 ["] 8	1 ["] 8	3 ["] 5

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
May	h m s	North. ° ' "	°	h m	° ' "	North. ° ' "	°
	4 17 52.13	22 2 5' 3"	3860602	1 30.4	81 8 31.4	1 0 6.0	1916124
	4 20 46.51	22 9 30.8	3868832	1 29.4	81 38 34.2	1 0 54.9	1919590
	4 23 41.02	22 16 44.3	3876974	1 28.4	82 8 34.1	1 1 43.4	1923043
	4 26 35.65	22 23 45.8	3885027	1 27.3	82 38 31.2	1 2 31.6	1926482
	4 29 30.39	22 30 35.3	3892994	1 26.3	83 8 25.4	1 3 19.4	1929909
	4 32 25.25	22 37 12.7	3900873	1 25.3	83 38 16.9	1 4 6.8	1933323
	4 35 20.20	22 43 38.0	3908665	1 24.2	84 8 5.5	1 4 53.9	1936722
	4 38 15.25	22 49 51.2	3916370	1 23.2	84 37 51.4	1 5 40.6	1940109
	4 41 10.39	22 55 52.1	3923990	1 22.2	85 7 34.5	1 6 26.9	1943481
	4 44 5.61	23 1 40.8	3931524	1 21.2	85 37 14.9	1 7 12.9	1946839
	4 47 0.90	23 7 17.3	3938973	1 20.2	86 6 52.5	1 7 58.4	1950183
	4 49 56.25	23 12 41.5	3946337	1 19.2	86 36 27.4	1 8 43.7	1953513
	4 52 51.68	23 17 53.4	3953616	1 18.1	87 5 59.6	1 9 28.5	1956827
	4 55 47.16	23 22 52.9	3960809	1 17.1	87 35 29.1	1 10 13.0	1960127
	4 58 42.69	23 27 40.1	3967918	1 16.1	88 4 56.0	1 10 57.0	1963412
	5 1 38.27	23 32 14.9	3974943	1 15.1	88 34 20.2	1 11 40.8	1966682
	5 4 33.89	23 36 37.4	3981882	1 14.1	89 3 41.8	1 12 24.1	1969935
	5 7 29.54	23 40 47.4	3988736	1 13.0	89 33 0.8	1 13 7.0	1973174
	5 10 25.22	23 44 45.0	3995504	1 12.0	90 2 17.1	1 13 49.6	1976396
	5 13 20.92	23 48 30.2	4002186	1 11.0	90 31 30.9	1 14 31.8	1979603
	5 16 16.64	23 52 2.9	4008780	1 10.0	91 0 42.1	1 15 13.6	1982793
	5 19 12.37	23 55 23.2	4015287	1 9.0	91 29 50.8	1 15 55.0	1985967
	5 22 8.10	23 58 30.9	4021706	1 8.0	91 58 56.9	1 16 36.1	1989124
	5 25 3.83	24 1 26.3	4028036	1 7.0	92 28 0.5	1 17 16.7	1992265
	5 27 59.54	24 4 9.1	4034276	1 6.0	92 57 1.6	1 17 57.0	1995388
	5 30 55.22	24 6 39.4	4040426	1 4.9	93 26 0.2	1 18 36.9	1998495
	5 33 50.87	24 8 57.3	4046485	1 3.9	93 54 56.4	1 19 16.3	2001584
	5 36 46.48	24 11 2.7	4052452	1 2.9	94 23 50.2	1 19 55.4	2004656
	5 39 42.03	24 12 55.6	4058327	1 1.9	94 52 41.5	1 20 34.1	2007710
	5 42 37.52	24 14 36.1	4064110	1 0.9	95 21 30.4	1 21 12.4	2010747
	5 45 32.93	24 16 4.1	4069801	0 59.9	95 50 16.9	1 21 50.4	2013766
	5 48 28.27	24 17 19.6	4075399	0 58.8	96 19 1.0	1 22 27.9	2016766
	5 51 23.50	24 18 22.8	4080905	0 57.8	96 47 42.8	1 23 5.0	2019749
	5 54 18.63	24 19 13.5	4086317	0 56.8	97 16 22.3	1 23 41.7	2022713
	5 57 13.65	24 19 51.9	4091638	0 55.8	97 44 59.4	1 24 18.1	2025659
	6 0 8.55	24 20 18.0	4096866	0 54.8	98 13 34.3	1 24 54.0	2028586
	6 3 3.32	24 20 31.7	4102003	0 53.7	98 42 6.8	1 25 29.5	2031494
	6 5 57.95	24 20 33.2	4107049	0 52.7	99 10 37.1	1 26 4.7	2034384
	6 8 52.43	24 20 22.4	4112004	0 51.7	99 39 5.2	1 26 39.4	2037254
	6 11 46.75	24 19 59.4	4116869	0 50.6	100 7 31.0	1 27 13.7	2040105
	6 14 40.92	24 19 24.3	4121644	0 49.6	100 35 54.6	1 27 47.6	2042937
	6 17 34.91	24 18 37.1	4126329	0 48.5	101 4 16.0	1 28 21.2	2045750
June							

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
				° ' "	° ' "	"	"
May 4	h m s 4 18 3 ^o 08	+ 7 ^s 25	0 ^s 13	22 2 33 ^o 7	+ 18 ^s 8	1 ^s 8	3 ^s 5
5	4 20 57 ^o 34	7 ^s 25	0 ^s 13	22 9 58 ^o 1	18 ^s 3	1 ^s 8	3 ^s 5
6	4 23 51 ^o 73	7 ^s 26	0 ^s 13	22 17 10 ^o 5	17 ^s 8	1 ^s 8	3 ^s 5
7	4 26 46 ^o 24	7 ^s 26	0 ^s 13	22 24 11 ^o 0	17 ^s 3	1 ^s 8	3 ^s 5
8	4 29 40 ^o 87	7 ^s 27	0 ^s 13	22 30 59 ^o 5	16 ^s 8	1 ^s 8	3 ^s 5
9	4 32 35 ^o 60	7 ^s 27	0 ^s 13	22 37 35 ^o 9	16 ^s 3	1 ^s 8	3 ^s 5
10	4 35 30 ^o 44	7 ^s 28	0 ^s 13	22 44 0 ^o 2	15 ^s 8	1 ^s 8	3 ^s 5
11	4 38 25 ^o 37	7 ^s 29	0 ^s 13	22 50 12 ^o 3	15 ^s 3	1 ^s 8	3 ^s 5
12	4 41 20 ^o 39	7 ^s 29	0 ^s 13	22 56 12 ^o 3	14 ^s 8	1 ^s 8	3 ^s 5
13	4 44 15 ^o 49	7 ^s 29	0 ^s 13	23 2 0 ^o 1	14 ^s 2	1 ^s 8	3 ^s 5
14	4 47 10 ^o 66	7 ^s 30	0 ^s 13	23 7 35 ^o 7	13 ^s 7	1 ^s 8	3 ^s 5
15	4 50 5 ^o 89	7 ^s 30	0 ^s 13	23 12 58 ^o 9	13 ^s 2	1 ^s 8	3 ^s 4
16	4 53 1 ^o 20	7 ^s 30	0 ^s 13	23 18 9 ^o 9	12 ^s 7	1 ^s 8	3 ^s 4
17	4 55 56 ^o 55	7 ^s 30	0 ^s 13	23 23 8 ^o 6	12 ^s 2	1 ^s 8	3 ^s 4
18	4 58 51 ^o 97	7 ^s 31	0 ^s 13	23 27 54 ^o 9	11 ^s 7	1 ^s 8	3 ^s 4
19	5 1 47 ^o 42	7 ^s 31	0 ^s 13	23 32 28 ^o 9	11 ^s 1	1 ^s 8	3 ^s 4
20	5 4 42 ^o 92	7 ^s 31	0 ^s 13	23 36 50 ^o 5	10 ^s 6	1 ^s 8	3 ^s 4
21	5 7 38 ^o 45	7 ^s 32	0 ^s 13	23 40 59 ^o 8	10 ^s 1	1 ^s 8	3 ^s 4
22	5 10 34 ^o 01	7 ^s 32	0 ^s 13	23 44 56 ^o 6	9 ^s 6	1 ^s 8	3 ^s 4
23	5 13 29 ^o 59	7 ^s 32	0 ^s 13	23 48 41 ^o 0	9 ^s 1	1 ^s 8	3 ^s 4
24	5 16 25 ^o 18	7 ^s 32	0 ^s 13	23 52 12 ^o 9	8 ^s 5	1 ^s 8	3 ^s 4
25	5 19 20 ^o 79	7 ^s 32	0 ^s 13	23 55 32 ^o 4	8 ^s 0	1 ^s 8	3 ^s 4
26	5 22 16 ^o 40	7 ^s 32	0 ^s 13	23 58 39 ^o 5	7 ^s 5	1 ^s 8	3 ^s 4
27	5 25 12 ^o 00	7 ^s 31	0 ^s 13	24 1 34 ^o 1	7 ^s 0	1 ^s 8	3 ^s 4
28	5 28 7 ^o 58	7 ^s 31	0 ^s 13	24 4 16 ^o 2	6 ^s 5	1 ^s 8	3 ^s 4
29	5 31 3 ^o 14	7 ^s 31	0 ^s 13	24 6 45 ^o 9	6 ^s 0	1 ^s 8	3 ^s 4
30	5 33 58 ^o 67	7 ^s 31	0 ^s 13	24 9 3 ^o 1	5 ^s 4	1 ^s 8	3 ^s 4
31	5 36 54 ^o 15	7 ^s 31	0 ^s 13	24 11 7 ^o 9	4 ^s 9	1 ^s 8	3 ^s 4
June 1	5 39 49 ^o 57	7 ^s 31	0 ^s 13	24 13 0 ^o 2	4 ^s 4	1 ^s 8	3 ^s 4
2	5 42 44 ^o 94	7 ^s 31	0 ^s 13	24 14 40 ^o 0	3 ^s 9	1 ^s 8	3 ^s 4
3	5 45 40 ^o 23	7 ^s 30	0 ^s 13	24 16 7 ^o 5	3 ^s 4	1 ^s 7	3 ^s 3
4	5 48 35 ^o 43	7 ^s 30	0 ^s 13	24 17 22 ^o 5	2 ^s 8	1 ^s 7	3 ^s 3
5	5 51 30 ^o 53	7 ^s 29	0 ^s 13	24 18 25 ^o 1	2 ^s 3	1 ^s 7	3 ^s 3
6	5 54 25 ^o 54	7 ^s 29	0 ^s 13	24 19 15 ^o 3	1 ^s 8	1 ^s 7	3 ^s 3
7	5 57 20 ^o 43	7 ^s 28	0 ^s 12	24 19 53 ^o 2	1 ^s 3	1 ^s 7	3 ^s 3
8	6 0 15 ^o 19	7 ^s 28	0 ^s 12	24 20 18 ^o 7	0 ^s 8	1 ^s 7	3 ^s 3
9	6 3 9 ^o 83	7 ^s 27	0 ^s 12	24 20 32 ^o 0	+ 0 ^s 3	1 ^s 7	3 ^s 3
10	6 6 4 ^o 33	7 ^s 27	0 ^s 12	24 20 33 ^o 0	- 0 ^s 2	1 ^s 7	3 ^s 3
11	6 8 58 ^o 69	7 ^s 26	0 ^s 12	24 20 21 ^o 8	0 ^s 7	1 ^s 7	3 ^s 3
12	6 11 52 ^o 88	7 ^s 26	0 ^s 12	24 19 58 ^o 4	1 ^s 2	1 ^s 7	3 ^s 3
13	6 14 46 ^o 91	7 ^s 25	0 ^s 12	24 19 22 ^o 9	1 ^s 7	1 ^s 7	3 ^s 3
14	6 17 40 ^o 77	+ 7 ^s 24	0 ^s 12	24 18 35 ^o 3	- 2 ^s 2	1 ^s 7	3 ^s 3

MEAN TIME.									
Month and Day.	Geocentric.					Heliocentric.			
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.		
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.		
	h m s	North. ° ' "	°	h m	° ' "	North. ° ' "	°		
June 14	6 17 34.91	24 18 37.1	4126329	0 48.5	101 4 16.0	1 28 21.2	2045750		
15	6 20 28.73	24 17 37.7	4130923	0 47.5	101 32 35.2	1 28 54.3	2048543		
16	6 23 22.37	24 16 26.3	4135428	0 46.4	102 0 52.2	1 29 27.0	2051316		
17	6 26 15.82	24 15 2.9	4139842	0 45.4	102 29 7.1	1 29 59.3	2054069		
18	6 29 9.08	24 13 27.5	4144167	0 44.3	102 57 19.8	1 30 31.2	2056802		
19	6 32 2.14	24 11 40.2	4148401	0 43.3	103 25 30.4	1 31 2.7	2059516		
20	6 34 55.00	24 9 41.0	4152544	0 42.2	103 53 39.0	1 31 33.7	2062209		
21	6 37 47.65	24 7 30.0	4156595	0 41.2	104 21 45.4	1 32 4.4	2064882		
22	6 40 40.08	24 5 7.2	4160554	0 40.1	104 49 49.8	1 32 34.7	2067534		
23	6 43 32.29	24 2 32.7	4164420	0 39.0	105 17 52.2	1 33 4.5	2070166		
24	6 46 24.27	23 59 46.5	4168192	0 37.9	105 45 52.5	1 33 34.0	2072778		
25	6 49 16.02	23 56 48.8	4171870	0 36.8	106 13 50.8	1 34 3.0	2075368		
26	6 52 7.52	23 53 39.5	4175452	0 35.8	106 41 47.2	1 34 31.6	2077938		
27	6 54 58.76	23 50 18.7	4178939	0 34.7	107 9 41.6	1 34 59.9	2080486		
28	6 57 49.76	23 46 46.5	4182329	0 33.6	107 37 34.1	1 35 27.7	2083014		
29	7 0 40.49	23 43 3.0	4185623	0 32.5	108 5 24.6	1 35 55.1	2085520		
30	7 3 30.95	23 39 8.2	4188818	0 31.4	108 33 13.3	1 36 22.1	2088005		
July 1	7 6 21.13	23 35 2.2	4191916	0 30.3	109 1 0.0	1 36 48.7	2090469		
2	7 9 11.02	23 30 45.0	4194916	0 29.2	109 28 45.0	1 37 14.9	2092911		
3	7 12 0.61	23 26 16.9	4197819	0 28.1	109 56 28.0	1 37 40.7	2095331		
4	7 14 49.91	23 21 37.7	4200623	0 27.0	110 24 9.3	1 38 6.1	2097730		
5	7 17 38.89	23 16 47.7	4203330	0 25.8	110 51 48.7	1 38 31.1	2100107		
6	7 20 27.56	23 11 46.9	4205939	0 24.7	111 19 26.3	1 38 55.7	2102462		
7	7 23 15.90	23 6 35.3	4208450	0 23.6	111 47 2.2	1 39 19.8	2104794		
8	7 26 3.92	23 1 13.2	4210864	0 22.4	112 14 36.3	1 39 43.6	2107105		
9	7 28 51.61	22 55 40.4	4213181	0 21.3	112 42 8.6	1 40 6.9	2109393		
10	7 31 38.96	22 49 57.2	4215402	0 20.1	113 9 39.3	1 40 29.9	2111659		
11	7 34 25.98	22 44 3.6	4217526	0 19.0	113 37 8.2	1 40 52.4	2113903		
12	7 37 12.65	22 37 59.7	4219555	0 17.8	114 4 35.4	1 41 14.5	2116124		
13	7 39 58.98	22 31 45.6	4221487	0 16.6	114 32 1.0	1 41 36.2	2118322		
14	7 42 44.97	22 25 21.3	4223323	0 15.4	114 59 24.9	1 41 57.6	2120498		
15	7 45 30.60	22 18 47.0	4225063	0 14.3	115 26 47.2	1 42 18.5	2122650		
16	7 48 15.89	22 12 2.7	4226706	0 13.1	115 54 7.9	1 42 38.9	2124780		
17	7 51 0.83	22 5 8.5	4228253	0 11.9	116 21 26.9	1 42 59.0	2126887		
18	7 53 45.42	21 58 4.6	4229703	0 10.7	116 48 44.4	1 43 18.7	2128971		
19	7 56 29.65	21 50 50.9	4231056	0 9.5	117 16 0.4	1 43 38.0	2131032		
20	7 59 13.53	21 43 27.6	4232310	0 8.3	117 43 14.8	1 43 56.8	2133070		
21	8 1 57.06	21 35 54.8	4233466	0 7.1	118 10 27.6	1 44 15.3	2135085		
22	8 4 40.23	21 28 12.5	4234522	0 5.8	118 37 39.0	1 44 33.3	2137076		
23	8 7 23.04	21 20 20.9	4235478	0 4.6	119 4 48.9	1 44 50.9	2139044		
24	8 10 5.49	21 12 20.0	4236333	0 3.4	119 31 57.3	1 45 8.1	2140989		
25	8 12 47.58	21 4 9.9	4237087	0 2.1	119 59 4.3	1 45 24.9	2142910		

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
<i>North.</i>							
June 14	^{h m s} 6 17 40.77	^s + 7.24	^s 0.12	^{° ' "} 24 18 35.3	["] - 2.2	["] 1.7	["] 3.3
15	6 20 34.46	7.23	0.12	24 17 35.6	2.7	1.7	3.3
16	6 23 27.97	7.22	0.12	24 16 23.8	3.2	1.7	3.3
17	6 26 21.28	7.21	0.12	24 15 0.1	3.7	1.7	3.3
18	6 29 14.41	7.20	0.12	24 13 24.4	4.2	1.7	3.3
19	6 32 7.34	7.19	0.12	24 11 36.8	4.7	1.7	3.3
20	6 35 0.07	7.18	0.12	24 9 37.3	5.2	1.7	3.3
21	6 37 52.58	7.17	0.12	24 7 26.1	5.7	1.7	3.3
22	6 40 44.88	7.17	0.12	24 5 3.1	6.2	1.7	3.3
23	6 43 36.95	7.16	0.12	24 2 28.4	6.7	1.7	3.3
24	6 46 28.80	7.16	0.12	23 59 42.0	7.2	1.7	3.3
25	6 49 20.41	7.15	0.12	23 56 44.1	7.6	1.7	3.3
26	6 52 11.77	7.14	0.12	23 53 34.6	8.1	1.7	3.3
27	6 55 2.89	7.13	0.12	23 50 13.7	8.6	1.7	3.3
28	6 57 53.74	7.12	0.12	23 46 41.5	9.1	1.7	3.3
29	7 0 44.34	7.11	0.12	23 42 57.8	9.6	1.7	3.3
30	7 3 34.66	7.10	0.12	23 39 2.9	10.1	1.7	3.3
July 1	7 6 24.70	7.08	0.12	23 34 56.9	10.5	1.7	3.3
2	7 9 14.46	7.07	0.12	23 30 39.7	10.9	1.7	3.3
3	7 12 3.91	7.06	0.12	23 26 11.5	11.3	1.7	3.3
4	7 14 53.07	7.04	0.12	23 21 32.4	11.8	1.7	3.2
5	7 17 41.92	7.03	0.12	23 16 42.4	12.2	1.7	3.2
6	7 20 30.44	7.02	0.12	23 11 41.6	12.7	1.7	3.2
7	7 23 18.65	7.01	0.12	23 6 30.2	13.2	1.7	3.2
8	7 26 6.53	6.99	0.12	23 1 8.1	13.7	1.7	3.2
9	7 28 54.08	6.98	0.12	22 55 35.4	14.2	1.7	3.2
10	7 31 41.29	6.97	0.12	22 49 52.3	14.6	1.7	3.2
11	7 34 28.18	6.95	0.12	22 43 58.9	15.0	1.7	3.2
12	7 37 14.71	6.93	0.12	22 37 55.1	15.4	1.7	3.2
13	7 40 0.90	6.92	0.12	22 31 41.2	15.8	1.7	3.2
14	7 42 46.74	6.90	0.12	22 25 17.1	16.2	1.7	3.2
15	7 45 32.24	6.89	0.12	22 18 43.0	16.6	1.7	3.2
16	7 48 17.39	6.87	0.12	22 11 59.0	17.0	1.7	3.2
17	7 51 2.19	6.85	0.12	22 5 5.0	17.4	1.7	3.2
18	7 53 46.64	6.83	0.12	21 58 1.4	17.8	1.7	3.2
19	7 56 30.73	6.81	0.12	21 50 48.0	18.3	1.7	3.2
20	7 59 14.47	6.79	0.12	21 43 25.0	18.7	1.7	3.2
21	^{h m s} 8 1 5.21	^{s} 6.78	^{s. n} 0.12	^{{° ' "} 21 36 1.4	^{{"} 19.1	^{{"} 1.7	^{{"} 3.2
22	8 4 23.56	6.75	0.12	21 20 19.4	19.8	1.7	3.2
23	8 10 5.87	6.73	0.12	21 12 18.8	20.2	1.7	3.2
24	8 12 47.82	6.72	0.12	21 4 9.1	20.6	1.7	3.2
25	8 15 29.40	+ 6.71	0.12	20 55 50.4	- 21.0	1.7	3.2

MEAN TIME.								
Month and Day.	Geocentric.				Heliocentric.			
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
	<i>h m s</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>	
July 25	8 12 47.58	21 4 9.9	4237087	0 2.1	119 59 4.3	1 45 24.9	2142910	
26	8 15 29.30	20 55 50.7	4237738	0 8.1	120 26 9.8	1 45 41.3	2144008	
27	8 18 10.66	20 47 22.6	4238285	23 58.4	120 53 14.0	1 45 57.2	2146683	
28	8 20 51.64	20 38 45.6	4238730	23 57.1	121 20 16.8	1 46 12.8	2148533	
29	8 23 32.26	20 29 59.8	4239070	23 55.8	121 47 18.2	1 46 28.0	2150300	
30	8 26 12.50	20 21 5.4	4239304	23 54.6	122 14 18.2	1 46 42.7	2152163	
31	8 28 52.36	20 12 2.4	4239433	23 53.3	122 41 16.9	1 46 57.1	2153942	
Aug. 1	8 31 31.85	20 2 51.0	4239458	23 52.0	123 8 14.3	1 47 11.0	2155697	
2	8 34 10.95	19 53 31.3	4239378	23 50.7	123 35 10.5	1 47 24.5	2157428	
3	8 36 49.68	19 44 3.3	4239192	23 49.4	124 2 5.3	1 47 37.7	2159134	
4	8 39 28.02	19 34 27.2	4238902	23 48.1	124 28 58.9	1 47 50.4	2160817	
5	8 42 5.98	19 24 43.1	4238507	23 46.8	124 55 51.3	1 48 2.7	2162475	
6	8 44 43.56	19 14 51.1	4238008	23 45.4	125 22 42.5	1 48 14.7	2164109	
7	8 47 20.75	19 4 51.3	4237405	23 44.1	125 49 32.5	1 48 26.2	2165718	
8	8 49 57.57	18 54 43.8	4236697	23 42.8	126 16 21.3	1 48 37.3	2167303	
9	8 52 34.01	18 44 28.7	4235886	23 41.5	126 43 8.9	1 48 48.0	2168804	
10	8 55 10.07	18 34 6.1	4234971	23 40.1	127 9 55.4	1 48 58.3	2170400	
11	8 57 45.76	18 23 36.1	4233953	23 38.8	127 36 40.8	1 49 8.3	2171911	
12	9 0 21.07	18 12 58.8	4232831	23 37.4	128 3 25.1	1 49 17.8	2173398	
13	9 2 56.02	18 2 14.2	4231605	23 36.0	128 30 8.3	1 49 26.9	2174860	
14	9 5 30.61	17 51 22.5	4230274	23 34.6	128 56 50.4	1 49 35.6	2176298	
15	9 8 4.84	17 40 23.8	4228839	23 33.3	129 23 31.5	1 49 43.9	2177711	
16	9 10 38.70	17 29 18.1	4227299	23 31.9	129 50 11.5	1 49 51.8	2179099	
17	9 13 12.21	17 18 5.6	4225654	23 30.5	130 16 50.5	1 49 59.3	2180463	
18	9 15 45.37	17 6 46.2	4223902	23 29.1	130 43 28.5	1 50 6.4	2181802	
19	9 18 18.19	16 55 20.3	4222044	23 27.7	131 10 5.6	1 50 13.1	2183116	
20	9 20 50.66	16 43 47.7	4220077	23 26.3	131 36 41.6	1 50 19.4	2184405	
21	9 23 22.78	16 32 8.8	4218001	23 24.9	132 3 16.8	1 50 25.3	2185669	
22	9 25 54.57	16 20 23.4	4215816	23 23.5	132 29 51.0	1 50 30.8	2186908	
23	9 28 26.02	16 8 31.8	4213520	23 22.0	132 56 24.3	1 50 35.9	2188123	
24	9 30 57.13	15 56 34.0	4211113	23 20.6	133 22 56.7	1 50 40.6	2189312	
25	9 33 27.91	15 44 30.2	4208594	23 19.2	133 49 28.3	1 50 44.9	2190476	
26	9 35 58.36	15 32 20.4	4205962	23 17.7	134 15 59.0	1 50 48.8	2191615	
27	9 38 28.48	15 20 4.9	4203218	23 16.3	134 42 28.9	1 50 52.3	2192729	
28	9 40 58.27	15 7 43.6	4200360	23 14.9	135 8 58.0	1 50 55.4	2193817	
29	9 43 27.74	14 55 16.7	4197388	23 13.4	135 35 26.3	1 50 58.1	2194880	
30	9 45 56.88	14 42 44.4	4194302	23 11.9	136 1 53.8	1 51 0.4	2195918	
31	9 48 25.70	14 30 6.7	4191102	23 10.5	136 28 20.6	1 51 2.4	2196930	
Sept. 1	9 50 54.20	14 17 23.7	4187788	23 9.0	136 54 46.7	1 51 3.9	2197917	
2	9 53 22.39	14 4 35.5	4184360	23 7.5	137 21 12.0	1 51 5.0	2198879	
3	9 55 50.26	13 51 42.3	4180818	23 6.0	137 47 36.7	1 51 5.8	2199815	
4	9 58 17.82	13 38 44.1	4177162	23 4.5	138 14 0.7	1 51 6.1	2200726	

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	^h ^m ^s	^s	^s	North. [°] ['] ["]	["]	["]	["]
July 25	8 15 29.40	+ 6.71	0.12	20 55 50.4	-21.0	1.7	3.2
26	8 18 10.62	6.70	0.12	20 47 22.7	21.4	1.7	3.2
27	8 20 51.46	6.69	0.12	20 38 46.2	21.7	1.7	3.2
28	8 23 31.94	6.68	0.12	20 30 0.9	22.0	1.7	3.2
29	8 26 12.04	6.67	0.12	20 21 6.9	22.4	1.7	3.2
30	8 28 51.76	6.65	0.12	20 12 4.5	22.7	1.7	3.2
31	8 31 31.10	6.63	0.12	20 2 53.6	23.1	1.7	3.2
Aug. 1	8 34 10.07	6.62	0.12	19 53 34.4	23.5	1.7	3.2
2	8 36 48.65	6.60	0.12	19 44 7.0	23.9	1.7	3.2
3	8 39 26.86	6.59	0.12	19 34 31.5	24.2	1.7	3.2
4	8 42 4.67	6.58	0.12	19 24 48.0	24.5	1.7	3.2
5	8 44 42.11	6.56	0.12	19 14 56.6	24.8	1.7	3.2
6	8 47 19.16	6.54	0.12	19 4 57.4	25.1	1.7	3.2
7	8 49 55.84	6.52	0.12	18 54 50.6	25.4	1.7	3.2
8	8 52 32.14	6.51	0.12	18 44 36.1	25.7	1.7	3.2
9	8 55 8.06	6.50	0.12	18 34 14.2	26.0	1.7	3.2
10	8 57 43.61	6.48	0.12	18 23 44.8	26.3	1.7	3.2
11	9 0 18.79	6.47	0.12	18 13 8.2	26.7	1.7	3.2
12	9 2 53.59	6.46	0.12	18 2 24.4	27.0	1.7	3.2
13	9 5 28.04	6.44	0.12	17 51 33.4	27.3	1.7	3.2
14	9 8 2.12	6.42	0.12	17 40 35.4	27.6	1.7	3.2
15	9 10 35.85	6.41	0.12	17 29 30.5	27.9	1.7	3.2
16	9 13 9.22	6.39	0.12	17 18 18.7	28.1	1.7	3.3
17	9 15 42.24	6.37	0.12	17 7 0.2	28.4	1.7	3.3
18	9 18 14.91	6.35	0.12	16 55 35.1	28.7	1.7	3.3
19	9 20 47.24	6.34	0.12	16 44 3.3	29.0	1.7	3.3
20	9 23 19.23	6.33	0.12	16 32 25.2	29.3	1.7	3.3
21	9 25 50.87	6.32	0.12	16 20 40.7	29.5	1.7	3.3
22	9 28 22.18	6.31	0.12	16 8 49.9	29.8	1.7	3.3
23	9 30 53.16	6.30	0.12	15 56 53.0	30.0	1.7	3.3
24	9 33 23.79	6.28	0.12	15 44 50.1	30.2	1.7	3.3
25	9 35 54.10	6.26	0.12	15 32 41.2	30.5	1.7	3.3
26	9 38 24.08	6.24	0.12	15 20 26.5	30.7	1.7	3.3
27	9 40 53.73	6.22	0.12	15 8 6.2	30.9	1.7	3.3
28	9 43 23.06	6.21	0.11	14 55 40.2	31.2	1.7	3.3
29	9 45 52.06	6.20	0.11	14 43 8.8	31.4	1.7	3.3
30	9 48 20.74	6.19	0.11	14 30 32.1	31.7	1.7	3.3
31	9 50 49.10	6.18	0.11	14 17 50.0	31.9	1.7	3.3
Sept. 1	9 53 17.15	6.16	0.11	14 5 2.8	32.1	1.7	3.3
2	9 55 44.88	6.15	0.11	13 52 10.6	32.3	1.7	3.3
3	9 58 12.30	6.14	0.11	13 39 13.4	32.5	1.7	3.3
4	10 0 39.42	+ 6.13	0.11	13 26 11.4	-32.7	1.7	3.3

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>
Sept. 4	9 58 17.82	13 38 44.1	4177162	23 4.5	138 14 0.7	1 51 6.1	2200726
5	10 04 5.08	13 25 41.1	4173393	23 3.1	138 40 24.0	1 51 6.1	2201611
6	10 3 12.04	13 12 33.3	4169510	23 1.6	139 6 46.7	1 51 5.6	2202471
7	10 5 38.70	12 59 20.9	4165514	23 0.1	139 33 8.8	1 51 4.8	2203305
8	10 8 5.07	12 46 3.8	4161405	22 58.6	139 59 30.2	1 51 3.6	2204114
9	10 10 31.16	12 32 42.3	4157182	22 57.0	140 25 51.1	1 51 2.0	2204897
10	10 12 56.97	12 19 16.4	4152847	22 55.5	140 52 11.4	1 51 0.0	2205655
11	10 15 22.51	12 5 46.1	4148397	22 54.0	141 18 31.2	1 50 57.6	2206387
12	10 17 47.78	11 52 11.7	4143834	22 52.5	141 44 50.5	1 50 54.8	2207093
13	10 20 12.79	11 38 33.1	4139155	22 50.9	142 11 9.3	1 50 51.7	2207774
14	10 22 37.55	11 24 50.4	4134362	22 49.4	142 37 27.5	1 50 48.1	2208429
15	10 25 2.05	11 11 3.8	4129452	22 47.9	143 3 45.4	1 50 44.2	2209058
16	10 27 26.32	10 57 13.3	4124426	22 46.4	143 30 2.7	1 50 39.9	2209662
17	10 29 50.34	10 43 19.0	4119283	22 44.8	143 56 19.6	1 50 35.2	2210239
18	10 32 14.14	10 29 21.1	4114021	22 43.3	144 22 36.2	1 50 30.1	2210791
19	10 34 37.71	10 15 19.5	4108639	22 41.7	144 48 52.3	1 50 24.6	2211318
20	10 37 1.05	10 1 14.5	4103137	22 40.1	145 15 8.0	1 50 18.7	2211818
21	10 39 24.18	9 47 6.1	4097514	22 38.6	145 41 23.4	1 50 12.5	2212293
22	10 41 47.10	9 32 54.4	4091768	22 37.0	146 7 38.4	1 50 5.9	2212742
23	10 44 9.80	9 18 39.5	4085898	22 35.5	146 33 53.2	1 49 58.9	2213165
24	10 46 32.31	9 4 21.5	4079906	22 33.9	147 0 7.6	1 49 51.5	2213561
25	10 48 54.60	8 50 0.6	4073789	22 32.3	147 26 21.7	1 49 43.7	2213932
26	10 51 16.70	8 35 36.7	4067548	22 30.8	147 52 35.6	1 49 35.5	2214278
27	10 53 38.61	8 21 10.2	4061183	22 29.2	148 18 49.2	1 49 27.0	2214597
28	10 56 0.32	8 6 41.0	4054692	22 27.6	148 45 2.6	1 49 18.1	2214890
29	10 58 21.84	7 52 9.3	4048075	22 26.0	149 11 15.8	1 49 8.8	2215158
30	11 0 43.18	7 37 35.1	4041333	22 24.4	149 37 28.8	1 48 59.1	2215399
Oct. 1	11 3 4.34	7 22 58.6	4034467	22 22.8	150 3 41.6	1 48 49.1	2215615
2	11 5 25.33	7 8 19.8	4027475	22 21.2	150 29 54.3	1 48 38.6	2215804
3	11 7 46.15	6 53 38.9	4020358	22 19.6	150 56 6.8	1 48 27.8	2215968
4	11 10 6.80	6 38 55.9	4013116	22 18.0	151 22 19.2	1 48 16.6	2216106
5	11 12 27.30	6 24 11.0	4005750	22 16.4	151 48 31.6	1 48 5.0	2216217
6	11 14 47.65	6 9 24.1	3998259	22 14.8	152 14 43.8	1 47 53.1	2216303
7	11 17 7.85	5 54 35.4	3990642	22 13.2	152 40 56.0	1 47 40.8	2216363
8	11 19 27.91	5 39 45.0	3982901	22 11.6	153 7 8.2	1 47 28.1	2216397
9	11 21 47.84	5 24 53.0	3975034	22 10.0	153 33 20.4	1 47 15.0	2216405
10	11 24 7.64	5 9 59.4	3967043	22 8.4	153 59 32.5	1 47 1.5	2216387
11	11 26 27.33	4 55 4.3	3958925	22 6.8	154 25 44.7	1 46 47.7	2216343
12	11 28 46.90	4 40 7.9	3950681	22 5.2	154 51 56.9	1 46 33.5	2216273
13	11 31 6.37	4 25 10.1	3942310	22 3.5	155 18 9.1	1 46 18.9	2216177
14	11 33 25.74	4 10 11.1	3933810	22 1.9	155 44 21.5	1 46 4.0	2216056
15	11 35 45.02	3 55 10.9	3925181	22 0.3	156 10 33.9	1 45 48.7	2215908

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	<i>h m s</i>	<i>s</i>	<i>s</i>	<i>North.</i> <i>° ' "</i>	<i>"</i>	<i>"</i>	<i>"</i>
Sept. 4	10 0 39.42	+ 6.13	0.11	13. 26 11.4	-32.7	1.7	3.3
5	10 3 6.23	6.12	0.11	13 13 4.6	32.9	1.7	3.3
6	10 5 32.75	6.10	0.11	12 59 53.1	33.1	1.7	3.3
7	10 7 58.99	6.09	0.11	12 46 37.1	33.3	1.7	3.3
8	10 10 24.93	6.08	0.11	12 33 16.6	33.5	1.7	3.3
9	10 12 50.60	6.06	0.11	12 19 51.7	33.7	1.7	3.3
10	10 15 16.00	6.05	0.11	12 6 22.5	33.8	1.7	3.3
11	10 17 41.13	6.04	0.11	11 52 49.1	34.0	1.7	3.3
12	10 20 6.00	6.03	0.11	11 39 11.5	34.2	1.7	3.3
13	10 22 30.61	6.02	0.11	11 25 29.9	34.4	1.7	3.3
14	10 24 54.97	6.01	0.11	11 11 44.4	34.6	1.7	3.3
15	10 27 19.10	6.00	0.11	10 57 55.0	34.8	1.7	3.3
16	10 29 42.98	5.99	0.11	10 44 1.8	35.0	1.7	3.3
17	10 32 6.64	5.98	0.11	10 30 4.9	35.1	1.7	3.3
18	10 34 30.06	5.97	0.11	10 16 4.5	35.2	1.7	3.3
19	10 36 53.26	5.96	0.11	10 2 0.6	35.3	1.7	3.3
20	10 39 16.25	5.95	0.11	9 47 53.2	35.4	1.7	3.3
21	10 41 39.02	5.95	0.11	9 33 42.6	35.6	1.8	3.4
22	10 44 1.59	5.94	0.11	9 19 28.8	35.7	1.8	3.4
23	10 46 23.95	5.93	0.11	9 5 11.9	35.8	1.8	3.4
24	10 48 46.10	5.93	0.11	8 50 52.1	35.9	1.8	3.4
25	10 51 8.06	5.92	0.11	8 36 29.4	36.0	1.8	3.4
26	10 53 29.82	5.91	0.11	8 22 4.0	36.1	1.8	3.4
27	10 55 51.39	5.90	0.11	8 7 35.9	36.2	1.8	3.4
28	10 58 12.77	5.89	0.11	7 53 5.3	36.3	1.8	3.4
29	11 0 33.96	5.88	0.11	7 38 32.3	36.4	1.8	3.4
30	11 2 54.98	5.87	0.11	7 23 56.9	36.5	1.8	3.4
Oct. 1	11 5 15.82	5.87	0.11	7 9 19.2	36.6	1.8	3.4
2	11 7 36.50	5.86	0.11	6 54 39.4	36.7	1.8	3.4
3	11 9 57.01	5.86	0.12	6 39 57.5	36.8	1.8	3.4
4	11 12 17.36	5.85	0.12	6 25 13.7	36.9	1.8	3.4
5	11 14 37.56	5.84	0.12	6 10 27.9	37.0	1.8	3.4
6	11 16 57.61	5.84	0.12	5 55 40.4	37.1	1.8	3.4
7	11 19 17.53	5.83	0.12	5 40 51.1	37.1	1.8	3.4
8	11 21 37.31	5.83	0.12	5 26 0.2	37.2	1.8	3.4
9	11 23 56.97	5.82	0.12	5 11 7.7	37.2	1.8	3.4
10	11 26 16.51	5.81	0.12	4 56 13.8	37.3	1.8	3.4
11	11 28 35.93	5.80	0.12	4 41 18.4	37.3	1.8	3.4
12	11 30 55.26	5.80	0.12	4 26 21.7	37.4	1.8	3.5
13	11 33 14.48	5.80	0.12	4 11 23.8	37.4	1.8	3.5
14	11 35 33.60	5.79	0.12	3 56 24.7	37.5	1.8	3.5
15	11 37 52.65	+ 5.79	0.12	3 41 24.6	-37.5	1.8	3.5

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North. ° ' "</i>	<i>°</i>
Oct. 15	11 35 45.02	3 55 10.9	.3925181	22 0.3	156 10 33.9	1 45 48.7	.2215908
16	11 38 4.21	3 40 9.7	.3916423	21 58.7	156 36 46.5	1 45 33.0	.2215734
17	11 40 23.33	3 25 7.5	.3907534	21 57.0	157 2 59.1	1 45 17.0	.2215535
18	11 42 42.37	3 10 4.4	.3898513	21 55.4	157 29 12.0	1 45 0.6	.2215310
19	11 45 1.34	2 55 0.5	.3889359	21 53.8	157 55 25.0	1 44 43.8	.2215058
20	11 47 20.24	2 39 56.0	.3880071	21 52.2	158 21 38.1	1 44 26.7	.2214781
21	11 49 39.08	2 24 50.9	.3870649	21 50.6	158 47 51.5	1 44 9.2	.2214478
22	11 51 57.87	2 9 45.3	.3861091	21 48.9	159 14 5.1	1 43 51.3	.2214149
23	11 54 16.61	1 54 39.3	.3851396	21 47.3	159 40 19.0	1 43 33.0	.2213794
24	11 56 35.29	1 39 33.1	.3841564	21 45.7	160 6 33.1	1 43 14.4	.2213414
25	11 58 53.93	1 24 26.7	.3831596	21 44.0	160 32 47.4	1 42 55.4	.2213007
26	12 1 12.54	1 9 20.2	.3821490	21 42.4	160 59 2.1	1 42 36.1	.2212575
27	12 3 31.10	0 54 13.8	.3811246	21 40.8	161 25 17.1	1 42 16.4	.2212117
28	12 5 49.63	0 39 7.5	.3800863	21 39.1	161 51 32.4	1 41 56.3	.2211633
29	12 8 8.12	0 24 1.5	.3790342	21 37.5	162 17 48.0	1 41 35.9	.2211124
30	12 10 26.60	0 8 55.8	.3779683	21 35.9	162 44 4.1	1 41 15.1	.2210588
		<i>South.</i>					
31	12 12 45.05	0 6 9.5	.3768886	21 34.2	163 10 20.5	1 40 53.9	.2210027
Nov. 1	12 15 3.48	0 21 14.2	.3757951	21 32.6	163 36 37.3	1 40 32.4	.2209441
2	12 17 21.90	0 36 18.3	.3746878	21 31.0	164 2 54.5	1 40 10.5	.2208828
3	12 19 40.32	0 51 21.8	.3735668	21 29.3	164 29 12.2	1 39 48.3	.2208190
4	12 21 58.73	1 6 24.4	.3724320	21 27.7	164 55 30.3	1 39 25.7	.2207525
5	12 24 17.15	1 21 26.3	.3712835	21 26.1	165 21 48.9	1 39 2.8	.2206836
6	12 26 35.59	1 36 27.1	.3701211	21 24.4	165 48 8.1	1 38 39.5	.2206120
7	12 28 54.05	1 51 27.0	.3689449	21 22.8	166 14 27.7	1 38 15.8	.2205379
8	12 31 12.52	2 6 25.8	.3677548	21 21.2	166 40 47.9	1 37 51.8	.2204612
9	12 33 31.03	2 21 23.5	.3665509	21 19.5	167 7 8.6	1 37 27.5	.2203819
10	12 35 49.59	2 36 19.9	.3653330	21 17.9	167 33 30.0	1 37 2.8	.2203001
11	12 38 8.18	2 51 15.0	.3641010	21 16.3	167 59 51.9	1 36 37.7	.2202157
12	12 40 26.83	3 6 8.6	.3628548	21 14.6	168 26 14.4	1 36 12.3	.2201287
13	12 42 45.53	3 21 0.8	.3615944	21 13.0	168 52 37.6	1 35 46.6	.2200392
14	12 45 4.29	3 35 51.4	.3603196	21 11.4	169 19 1.5	1 35 20.5	.2199471
15	12 47 23.12	3 50 40.3	.3590303	21 9.8	169 45 26.0	1 34 54.0	.2198525
16	12 49 42.02	4 5 27.5	.3577265	21 8.2	170 11 51.2	1 34 27.2	.2197553
17	12 52 1.00	4 20 12.8	.3564079	21 6.5	170 38 17.1	1 34 0.1	.2196556
18	12 54 20.05	4 34 56.1	.3550746	21 4.9	171 4 43.7	1 33 32.6	.2195534
19	12 56 39.19	4 49 37.3	.3537265	21 3.3	171 31 11.1	1 33 4.8	.2194486
20	12 58 58.41	5 4 16.4	.3523634	21 1.7	171 57 39.3	1 32 36.6	.2193413
21	13 1 17.72	5 18 53.2	.3509852	21 0.0	172 24 8.3	1 32 8.1	.2192315
22	13 3 37.12	5 33 27.6	.3495920	20 58.4	172 50 38.1	1 31 39.2	.2191191
23	13 5 56.60	5 47 59.6	.3481836	20 56.8	173 17 8.7	1 31 10.0	.2190043
24	13 8 16.19	6 2 28.8	.3467601	20 55.2	173 43 40.1	1 30 40.4	.2188869

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
				° ' "	" "	" "	" "
Oct. 15	h m s 11 37 52.65	+ 5.79	0.12	3 41 24.6	- 37.5	1.8	3.5
16	11 40 11.61	5.79	0.12	3 26 23.5	37.5	1.8	3.5
17	11 42 30.50	5.78	0.12	3 11 21.5	37.6	1.8	3.5
18	11 44 49.32	5.78	0.12	2 56 18.8	37.6	1.8	3.5
19	11 47 8.07	5.78	0.12	2 41 15.3	37.7	1.8	3.5
20	11 49 26.76	5.78	0.12	2 26 11.3	37.7	1.8	3.5
21	11 51 45.40	5.77	0.12	2 11 6.7	37.7	1.8	3.5
22	11 54 3.98	5.77	0.12	1 56 1.8	37.7	1.8	3.5
23	11 56 22.51	5.77	0.12	1 40 56.6	37.7	1.8	3.5
24	11 58 41.00	5.77	0.12	1 25 51.3	37.7	1.8	3.5
25	12 0 59.45	5.77	0.12	1 10 45.8	37.7	1.8	3.5
26	12 3 17.86	5.77	0.12	0 55 40.4	37.7	1.8	3.5
27	12 5 36.24	5.77	0.12	0 40 35.1	37.7	1.8	3.5
28	12 7 54.58	5.76	0.12	0 25 30.1	37.7	1.9	3.6
29	12 10 12.90	5.76	0.12	0 10 25.4	37.7	1.9	3.6
30	12 12 31.19	5.76	0.12	South. 0 4 38.9	37.7	1.9	3.6
31	12 14 49.47	5.76	0.12	0 19 42.7	37.6	1.9	3.6
Nov. 1	12 17 7.73	5.76	0.13	0 34 45.8	37.6	1.9	3.6
2	12 19 25.99	5.76	0.13	0 49 48.3	37.6	1.9	3.6
3	12 21 44.25	5.76	0.13	1 4 50.0	37.5	1.9	3.6
4	12 24 2.51	5.76	0.13	1 19 50.9	37.5	1.9	3.6
5	12 26 20.79	5.76	0.13	1 34 50.8	37.4	1.9	3.7
6	12 28 39.09	5.77	0.13	1 49 49.8	37.4	1.9	3.7
7	12 30 57.40	5.77	0.13	2 4 47.7	37.4	1.9	3.7
8	12 33 15.76	5.77	0.13	2 19 44.5	37.3	1.9	3.7
9	12 35 34.15	5.77	0.13	2 34 40.1	37.3	1.9	3.7
10	12 37 52.58	5.77	0.13	2 49 34.3	37.3	1.9	3.7
11	12 40 11.06	5.77	0.13	3 4 27.1	37.2	1.9	3.7
12	12 42 29.60	5.78	0.13	3 19 18.5	37.2	1.9	3.7
13	12 44 48.20	5.78	0.13	3 34 8.2	37.1	1.9	3.7
14	12 47 6.86	5.78	0.13	3 48 56.3	37.0	1.9	3.7
15	12 49 25.60	5.78	0.13	4 3 42.7	36.9	2.0	3.8
16	12 51 44.41	5.79	0.13	4 18 27.2	36.8	2.0	3.8
17	12 54 3.30	5.79	0.13	4 33 9.8	36.7	2.0	3.8
18	12 56 22.27	5.79	0.13	4 47 50.3	36.6	2.0	3.8
19	12 58 41.32	5.80	0.13	5 2 28.6	36.5	2.0	3.8
20	13 1 0.46	5.80	0.13	5 17 4.7	36.4	2.0	3.8
21	13 3 19.69	5.80	0.13	5 31 38.5	36.3	2.0	3.8
22	13 5 39.01	5.81	0.13	5 46 9.8	36.2	2.0	3.8
23	13 7 58.42	5.81	0.14	6 0 38.4	36.1	2.0	3.9
24	13 10 17.94	+ 5.82	0.14	6 15 4.4	- 36.0	2.0	3.9

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>South.</i> <i>° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>
Nov. 24	13 8 16.19	6 2 28.8	3467601	20 55.2	173 43 40.1	1 30 40.4	2188869
25	13 10 35.87	6 16 55.5	3453215	20 53.6	174 10 12.4	1 30 10.5	2187670
26	13 12 55.64	6 31 19.4	3438677	20 52.0	174 36 45.6	1 29 40.3	2186446
27	13 15 15.52	6 45 40.4	3423987	20 50.4	175 3 19.7	1 29 9.7	2185196
28	13 17 35.50	6 59 58.4	3409145	20 48.8	175 29 54.7	1 28 38.8	2183922
29	13 19 55.58	7 14 13.3	3394151	20 47.2	175 56 30.6	1 28 7.5	2182623
30	13 22 15.78	7 28 25.1	3379006	20 45.6	176 23 7.5	1 27 36.0	2181299
Dec. 1	13 24 36.10	7 42 33.7	3363709	20 43.9	176 49 45.3	1 27 4.0	2179950
2	13 26 56.53	7 56 38.9	3348260	20 42.3	177 16 24.1	1 26 31.8	2178576
3	13 29 17.08	8 10 40.7	3332660	20 40.8	177 43 3.9	1 25 59.2	2177177
4	13 31 37.76	8 24 39.1	3316908	20 39.2	178 9 44.7	1 25 26.3	2175754
5	13 33 58.57	8 38 33.8	3301004	20 37.6	178 36 26.5	1 24 53.1	2174306
6	13 36 19.51	8 52 25.0	3284948	20 36.0	179 3 9.4	1 24 19.5	2172833
7	13 38 40.60	9 6 12.4	3268739	20 34.4	179 29 53.4	1 23 45.7	2171335
8	13 41 1.83	9 19 56.1	3252377	20 32.8	179 56 38.4	1 23 11.4	2169813
9	13 43 23.21	9 33 35.9	3235863	20 31.2	180 23 24.6	1 22 36.9	2168266
10	13 45 44.75	9 47 11.8	3219194	20 29.7	180 50 11.9	1 22 2.0	2166695
11	13 48 6.44	10 0 43.7	3202369	20 28.1	181 17 0.4	1 21 26.8	2165099
12	13 50 28.30	10 14 11.3	3185387	20 26.5	181 43 50.1	1 20 51.3	2163479
13	13 52 50.32	10 27 34.8	3168248	20 24.9	182 10 40.9	1 20 15.5	2161834
14	13 55 12.51	10 40 54.0	3150949	20 23.4	182 37 33.0	1 19 39.3	2160165
15	13 57 34.87	10 54 8.8	3133489	20 21.8	183 4 26.3	1 19 2.8	2158472
16	13 59 57.41	11 7 19.2	3115868	20 20.2	183 31 20.9	1 18 26.0	2156754
17	14 2 20.12	11 20 24.9	3098084	20 18.7	183 58 16.8	1 17 48.9	2155012
18	14 4 43.00	11 33 26.0	3080137	20 17.1	184 25 14.0	1 17 11.4	2153247
19	14 7 6.05	11 46 22.2	3062026	20 15.5	184 52 12.4	1 16 33.6	2151457
20	14 9 29.27	11 59 13.6	3043750	20 14.0	185 19 12.3	1 15 55.5	2149643
21	14 11 52.67	12 12 0.0	3025308	20 12.5	185 46 13.4	1 15 17.1	2147806
22	14 14 16.23	12 24 41.3	3006700	20 10.9	186 13 16.0	1 14 38.4	2145944
23	14 16 39.97	12 37 17.5	2987926	20 9.4	186 40 19.9	1 13 59.4	2144059
24	14 19 3.87	12 49 48.4	2968987	20 7.8	187 7 25.2	1 13 20.1	2142151
25	14 21 27.95	13 2 13.9	2949881	20 6.3	187 34 32.0	1 12 40.4	2140219
26	14 23 52.19	13 14 34.0	2930610	20 4.8	188 1 40.2	1 12 0.5	2138263
27	14 26 16.60	13 26 48.5	2911173	20 3.2	188 28 49.9	1 11 20.3	2136284
28	14 28 41.17	13 38 57.5	2891570	20 1.7	188 56 1.0	1 10 39.7	2134282
29	14 31 5.92	13 51 0.7	2871802	20 0.2	189 23 13.7	1 9 58.9	2132257
30	14 33 30.83	14 2 58.2	2851868	19 58.6	189 50 27.9	1 9 17.7	2130208
31	14 35 55.92	14 14 49.8	2831767	19 57.1	190 17 43.6	1 8 36.3	2128136
32	14 38 21.17	14 26 35.6	2811501	19 55.6	190 45 0.9	1 7 54.5	2126042

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
				<i>South.</i>			
	<i>h m s</i>	<i>+ s</i>	<i>s</i>	<i>° ' "</i>	<i>— " "</i>	<i>"</i>	<i>"</i>
Nov. 24	13 10 17.94	+ 5.82	0.14	6 15 4.4	—36.0	2.0	3.9
25	13 12 37.54	5.82	0.14	6 29 27.7	35.9	2.0	3.9
26	13 14 57.25	5.83	0.14	6 43 48.1	35.8	2.0	3.9
27	13 17 17.06	5.83	0.14	6 58 5.6	35.7	2.0	3.9
28	13 19 36.97	5.83	0.14	7 12 20.0	35.6	2.0	3.9
29	13 21 57.00	5.84	0.14	7 26 31.2	35.4	2.0	3.9
30	13 24 17.14	5.84	0.14	7 40 39.3	35.3	2.1	4.0
Dec. 1	13 26 37.40	5.85	0.14	7 54 44.0	35.1	2.1	4.0
2	13 28 57.78	5.85	0.14	8 8 45.4	35.0	2.1	4.0
3	13 31 18.29	5.86	0.14	8 22 43.3	34.8	2.1	4.0
4	13 33 38.92	5.86	0.14	8 36 37.6	34.7	2.1	4.0
5	13 35 59.69	5.87	0.14	8 50 28.4	34.6	2.1	4.0
6	13 38 20.60	5.87	0.14	9 4 15.4	34.4	2.1	4.0
7	13 40 41.66	5.88	0.14	9 17 58.7	34.3	2.1	4.1
8	13 43 2.86	5.88	0.14	9 31 38.2	34.1	2.1	4.1
9	13 45 24.22	5.89	0.14	9 45 13.8	33.9	2.1	4.1
10	13 47 45.73	5.89	0.14	9 58 45.3	33.8	2.1	4.1
11	13 50 7.41	5.90	0.14	10 12 12.7	33.6	2.1	4.1
12	13 52 29.25	5.91	0.14	10 25 35.9	33.4	2.1	4.1
13	13 54 51.26	5.92	0.14	10 38 54.9	33.2	2.2	4.2
14	13 57 13.45	5.93	0.14	10 52 9.5	33.0	2.2	4.2
15	13 59 35.80	5.94	0.14	11 5 19.7	32.8	2.2	4.2
16	14 1 58.33	5.95	0.14	11 18 25.3	32.6	2.2	4.2
17	14 4 21.02	5.95	0.14	11 31 26.2	32.4	2.2	4.2
18	14 6 43.89	5.96	0.14	11 44 22.4	32.2	2.2	4.3
19	14 9 6.94	5.96	0.14	11 57 13.7	32.0	2.2	4.3
20	14 11 30.15	5.97	0.14	12 10 0.1	31.8	2.2	4.3
21	14 13 53.54	5.97	0.15	12 22 41.4	31.6	2.2	4.3
22	14 16 17.09	5.98	0.15	12 35 17.5	31.4	2.2	4.3
23	14 18 40.82	5.98	0.15	12 47 48.5	31.2	2.2	4.3
24	14 21 4.71	5.99	0.15	13 0 14.1	31.0	2.2	4.3
25	14 23 28.77	6.00	0.15	13 12 34.3	30.7	2.3	4.4
26	14 25 53.00	6.01	0.15	13 24 49.0	30.5	2.3	4.4
27	14 28 17.39	6.02	0.16	13 36 58.0	30.3	2.3	4.4
28	14 30 41.95	6.03	0.16	13 49 1.5	30.1	2.3	4.4
29	14 33 6.69	6.03	0.16	14 0 59.1	29.8	2.3	4.4
30	14 35 31.59	6.04	0.16	14 12 51.0	29.5	2.3	4.5
31	14 37 56.66	6.05	0.16	14 24 37.0	29.3	2.3	4.5
32	14 40 21.91	+ 6.06	0.16	14 36 17.1	—29.0	2.3	4.5

MEAN TIME.												
Month and Day.		Geocentric.				Heliocentric.						
		Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.				
									Noon.	Noon.	Noon.	Noon.
		North.		0			South.		0			
		h m s	° ' "	°	h m	° ' "	° ' "	° ' "	°			
Jan.	1	4 48 50.94	21 53 37.8	.6229636	10 4.6	78 34 25.2	0 27 23.6		.7069190			
	2	4 48 23.50	21 53 2.6	.6237653	10 0.2	78 39 37.2	0 27 16.9		.7069473			
	3	4 47 56.67	21 52 28.3	.6245938	9 55.8	78 44 49.1	0 27 10.2		.7069756			
	4	4 47 30.47	21 51 54.9	.6254485	9 51.5	78 50 1.0	0 27 3.5		.7070039			
	5	4 47 4.91	21 51 22.4	.6263290	9 47.1	78 55 12.8	0 26 56.8		.7070322			
	6	4 46 40.01	21 50 50.9	.6272345	9 42.8	79 0 24.6	0 26 50.1		.7070606			
	7	4 46 15.79	21 50 20.4	.6281647	9 38.4	79 5 36.3	0 26 43.4		.7070890			
	8	4 45 52.27	21 49 51.0	.6291188	9 34.1	79 10 48.0	0 26 36.7		.7071174			
	9	4 45 29.46	21 49 22.7	.6300963	9 29.8	79 15 59.7	0 26 30.0		.7071458			
	10	4 45 7.37	21 48 55.5	.6310966	9 25.5	79 21 11.3	0 26 23.2		.7071742			
	11	4 44 46.02	21 48 29.6	.6321190	9 21.2	79 26 22.9	0 26 16.5		.7072026			
	12	4 44 25.41	21 48 4.8	.6331629	9 17.0	79 31 34.4	0 26 9.8		.7072311			
	13	4 44 5.57	21 47 41.3	.6342277	9 12.7	79 36 45.9	0 26 3.1		.7072595			
	14	4 43 46.49	21 47 19.1	.6353127	9 8.5	79 41 57.4	0 25 56.4		.7072880			
	15	4 43 28.20	21 46 58.2	.6364174	9 4.3	79 47 8.8	0 25 49.6		.7073165			
	16	4 43 10.69	21 46 38.7	.6375412	9 0.0	79 52 20.2	0 25 42.9		.7073450			
	17	4 42 53.98	21 46 20.5	.6386834	8 55.8	79 57 31.5	0 25 36.2		.7073735			
	18	4 42 38.08	21 46 3.7	.6398436	8 51.6	80 2 42.8	0 25 29.4		.7074021			
	19	4 42 22.99	21 45 48.3	.6410210	8 47.5	80 7 54.0	0 25 22.7		.7074307			
	20	4 42 8.72	21 45 34.4	.6422150	8 43.3	80 13 5.2	0 25 15.9		.7074592			
	21	4 41 55.27	21 45 22.0	.6434252	8 39.1	80 18 16.3	0 25 9.2		.7074878			
	22	4 41 42.65	21 45 11.1	.6446509	8 35.0	80 23 27.5	0 25 2.4		.7075164			
	23	4 41 30.88	21 45 1.7	.6458916	8 30.9	80 28 38.5	0 24 55.7		.7075450			
	24	4 41 19.94	21 44 53.8	.6471467	8 26.8	80 33 49.6	0 24 48.9		.7075737			
	25	4 41 9.85	21 44 47.5	.6484157	8 22.7	80 39 0.5	0 24 42.2		.7076023			
	26	4 41 0.62	21 44 42.8	.6496979	8 18.6	80 44 11.5	0 24 35.4		.7076309			
	27	4 40 52.24	21 44 39.7	.6509927	8 14.5	80 49 22.4	0 24 28.7		.7076596			
	28	4 40 44.72	21 44 38.2	.6522996	8 10.5	80 54 33.2	0 24 21.9		.7076883			
	29	4 40 38.07	21 44 38.4	.6536180	8 6.4	80 59 44.1	0 24 15.1		.7077170			
	30	4 40 32.29	21 44 40.1	.6549473	8 2.4	81 4 54.8	0 24 8.4		.7077458			
31	4 40 27.38	21 44 43.5	.6562869	7 58.4	81 10 5.6	0 24 1.6		.7077745				
Feb.	1	4 40 23.34	21 44 48.5	.6576362	7 54.4	81 15 16.3	0 23 54.8		.7078033			
	2	4 40 20.18	21 44 55.1	.6589946	7 50.4	81 20 26.9	0 23 48.0		.7078320			
	3	4 40 17.90	21 45 3.4	.6603616	7 46.5	81 25 37.5	0 23 41.3		.7078606			
	4	4 40 16.49	21 45 13.3	.6617365	7 42.5	81 30 48.1	0 23 34.5		.7078898			
	5	4 40 15.95	21 45 24.8	.6631187	7 38.6	81 35 58.6	0 23 27.7		.7079184			
	6	4 40 16.29	21 45 38.0	.6645077	7 34.7	81 41 9.1	0 23 20.9		.7079472			
	7	4 40 17.50	21 45 52.8	.6659030	7 30.8	81 46 19.5	0 23 14.1		.7079761			
	8	4 40 19.59	21 46 9.2	.6673039	7 26.9	81 51 29.9	0 23 7.3		.7080049			
	9	4 40 22.54	21 46 27.2	.6687099	7 23.0	81 56 40.2	0 23 0.6		.7080338			
	10	4 40 26.35	21 46 46.8	.6701204	7 19.2	82 1 50.5	0 22 53.8		.7080627			
	11	4 40 31.03	21 47 8.0	.6715351	7 15.3	82 7 0.8	0 22 47.0		.7080916			

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
<i>North.</i>							
	<i>h m s</i>	<i>s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>"</i>	<i>"</i>
Jan. 1	4 48 39.34	- 1.14	1.71	21 53 23.0	- 1.5	22.0	2.0
2	4 48 12.24	1.12	1.71	21 52 48.2	1.4	22.0	2.0
3	4 47 45.75	1.09	1.70	21 52 14.3	1.4	21.9	2.0
4	4 47 19.89	1.06	1.70	21 51 41.4	1.4	21.9	2.0
5	4 46 54.67	1.04	1.70	21 51 9.4	1.3	21.9	2.0
6	4 46 30.12	1.01	1.69	21 50 38.4	1.3	21.8	2.0
7	4 46 6.26	0.98	1.69	21 50 8.5	1.2	21.8	2.0
8	4 45 43.09	0.95	1.69	21 49 39.6	1.2	21.7	2.0
9	4 45 20.63	0.92	1.68	21 49 11.8	1.1	21.6	2.0
10	4 44 58.89	0.89	1.68	21 48 45.2	1.1	21.6	2.0
11	4 44 37.89	0.86	1.67	21 48 19.8	1.0	21.5	2.0
12	4 44 17.64	0.83	1.67	21 47 55.6	1.0	21.5	2.0
13	4 43 58.15	0.80	1.66	21 47 32.6	0.9	21.4	2.0
14	4 43 39.43	0.76	1.66	21 47 11.0	0.9	21.3	2.0
15	4 43 21.49	0.73	1.66	21 46 50.7	0.8	21.3	2.0
16	4 43 4.33	0.70	1.66	21 46 31.7	0.8	21.3	2.0
17	4 42 47.97	0.67	1.65	21 46 14.1	0.7	21.2	2.0
18	4 42 32.41	0.63	1.65	21 45 57.9	0.6	21.2	2.0
19	4 42 17.67	0.60	1.65	21 45 43.1	0.6	21.1	1.9
20	4 42 3.74	0.56	1.64	21 45 29.7	0.5	21.0	1.9
21	4 41 50.63	0.53	1.63	21 45 17.9	0.4	21.0	1.9
22	4 41 38.35	0.49	1.63	21 45 7.5	0.4	21.0	1.9
23	4 41 26.90	0.46	1.62	21 44 58.7	0.3	20.9	1.9
24	4 41 16.29	0.42	1.62	21 44 51.4	0.3	20.9	1.9
25	4 41 6.53	0.39	1.61	21 44 45.7	0.2	20.8	1.9
26	4 40 57.62	0.35	1.60	21 44 41.6	0.1	20.7	1.9
27	4 40 49.56	0.32	1.60	21 44 39.0	- 0.1	20.7	1.9
28	4 40 42.36	0.28	1.60	21 44 38.1	0.0	20.6	1.9
29	4 40 36.02	0.25	1.59	21 44 38.8	+ 0.1	20.5	1.9
30	4 40 30.55	0.21	1.59	21 44 41.1	0.1	20.5	1.9
31	4 40 25.94	0.17	1.58	21 44 45.0	0.2	20.4	1.9
Feb. 1	4 40 22.20	0.14	1.57	21 44 50.5	0.3	20.3	1.9
2	4 40 19.34	0.10	1.57	21 44 57.6	0.3	20.3	1.9
3	4 40 17.34	0.07	1.57	21 45 6.4	0.4	20.2	1.9
4	4 40 16.22	- 0.03	1.56	21 45 16.8	0.5	20.1	1.9
5	4 40 15.96	+ 0.01	1.55	21 45 28.8	0.5	20.0	1.9
6	4 40 16.58	0.04	1.55	21 45 42.5	0.6	20.0	1.9
7	4 40 18.06	0.08	1.54	21 45 57.7	0.7	19.9	1.8
8	4 40 20.41	0.12	1.54	21 46 14.6	0.7	19.8	1.8
9	4 40 23.62	0.15	1.54	21 46 33.1	0.8	19.8	1.8
10	4 40 27.69	0.19	1.53	21 46 53.1	0.9	19.8	1.8
11	4 40 32.61	+ 0.22	1.53	21 47 14.7	+ 0.9	19.7	1.8

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>South. ° ' "</i>	<i>°</i>
Feb. 11	4 40 31.03	21 47 8.0	.6715351	7 15.3	82 7 0.8	0 22 47.0	.7080916
12	4 40 36.56	21 47 30.8	.6729532	7 11.5	82 12 11.0	0 22 40.2	.7081205
13	4 40 42.95	21 47 55.1	.6743744	7 7.6	82 17 21.2	0 22 33.4	.7081494
14	4 40 50.18	21 48 20.9	.6757981	7 3.8	82 22 31.3	0 22 26.6	.7081784
15	4 40 58.25	21 48 48.2	.6772240	7 0.0	82 27 41.4	0 22 19.8	.7082073
16	4 41 7.16	21 49 17.1	.6786516	6 56.2	82 32 51.5	0 22 13.0	.7082362
17	4 41 16.90	21 49 47.4	.6800805	6 52.4	82 38 1.5	0 22 6.2	.7082652
18	4 41 27.46	21 50 19.2	.6815102	6 48.7	82 43 11.4	0 21 59.3	.7082942
19	4 41 38.85	21 50 52.4	.6829404	6 44.9	82 48 21.4	0 21 52.5	.7083232
20	4 41 51.05	21 51 27.0	.6843706	6 41.2	82 53 31.2	0 21 45.7	.7083522
21	4 42 4.06	21 52 3.0	.6858004	6 37.5	82 58 41.1	0 21 38.9	.7083812
22	4 42 17.87	21 52 40.4	.6872295	6 33.8	83 3 50.9	0 21 32.1	.7084102
23	4 42 32.49	21 53 19.1	.6886575	6 30.1	83 9 0.6	0 21 25.3	.7084393
24	4 42 47.90	21 53 59.2	.6900840	6 26.5	83 14 10.3	0 21 18.5	.7084683
25	4 43 4.10	21 54 40.5	.6915086	6 22.8	83 19 20.0	0 21 11.6	.7084974
26	4 43 21.09	21 55 23.2	.6929310	6 19.2	83 24 29.6	0 21 4.8	.7085265
27	4 43 38.85	21 56 7.1	.6943507	6 15.6	83 29 39.2	0 20 58.0	.7085556
28	4 43 57.39	21 56 52.2	.6957674	6 11.9	83 34 48.7	0 20 51.2	.7085847
Mar. 1	4 44 16.69	21 57 38.5	.6971807	6 8.3	83 39 58.2	0 20 44.3	.7086138
2	4 44 36.76	21 58 25.9	.6985904	6 4.7	83 45 7.7	0 20 37.5	.7086429
3	4 44 57.58	21 59 14.5	.6999959	6 1.1	83 50 17.1	0 20 30.7	.7086721
4	4 45 19.15	22 0 4.2	.7013970	5 57.6	83 55 26.5	0 20 23.8	.7087013
5	4 45 41.45	22 0 54.9	.7027933	5 54.0	84 0 35.8	0 20 17.0	.7087304
6	4 46 4.49	22 1 46.7	.7041844	5 50.5	84 5 45.1	0 20 10.1	.7087596
7	4 46 28.26	22 2 39.4	.7055701	5 46.9	84 10 54.3	0 20 3.3	.7087888
8	4 46 52.74	22 3 33.1	.7069499	5 43.4	84 16 3.5	0 19 56.5	.7088180
9	4 47 17.94	22 4 27.7	.7083236	5 39.9	84 21 12.6	0 19 49.6	.7088472
10	4 47 43.83	22 5 23.3	.7096910	5 36.4	84 26 21.7	0 19 42.8	.7088764
11	4 48 10.41	22 6 19.6	.7110516	5 32.9	84 31 30.8	0 19 35.9	.7089056
12	4 48 37.68	22 7 16.8	.7124054	5 29.4	84 36 39.8	0 19 29.1	.7089349
13	4 49 5.62	22 8 14.7	.7137520	5 26.0	84 41 48.8	0 19 22.2	.7089641
14	4 49 34.23	22 9 13.3	.7150912	5 22.5	84 46 57.8	0 19 15.4	.7089934
15	4 50 3.49	22 10 12.7	.7164227	5 19.1	84 52 6.7	0 19 8.5	.7090226
16	4 50 33.41	22 11 12.7	.7177464	5 15.6	84 57 15.5	0 19 1.6	.7090519
17	4 51 3.96	22 12 13.3	.7190620	5 12.2	85 2 24.3	0 18 54.8	.7090812
18	4 51 35.15	22 13 14.5	.7203693	5 8.8	85 7 33.1	0 18 47.9	.7091105
19	4 52 6.96	22 14 16.3	.7216682	5 5.4	85 12 41.8	0 18 41.1	.7091398
20	4 52 39.39	22 15 18.6	.7229584	5 2.0	85 17 50.5	0 18 34.2	.7091691
21	4 53 12.43	22 16 21.4	.7242398	4 58.6	85 22 59.2	0 18 27.3	.7091984
22	4 53 46.07	22 17 24.7	.7255121	4 55.2	85 28 7.8	0 18 20.5	.7092278
23	4 54 20.31	22 18 28.4	.7267753	4 51.9	85 33 16.3	0 18 13.6	.7092571
24	4 54 55.13	22 19 32.5	.7280292	4 48.5	85 38 24.8	0 18 6.7	.7092865

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
				<i>North.</i>			
	<i>h m s</i>	<i>+ s</i>	<i>s</i>	<i>° ' "</i>	<i>+ "</i>	<i>"</i>	<i>"</i>
Feb. 11	4 40 32.61	+ 0.22	1.53	21 47 14.7	+ 0.9	19.7	1.8
12	4 40 38.39	0.26	1.53	21 47 37.9	1.0	19.7	1.8
13	4 40 45.01	0.29	1.52	21 48 2.6	1.1	19.6	1.8
14	4 40 52.47	0.33	1.51	21 48 28.8	1.1	19.5	1.8
15	4 41 0.76	0.36	1.51	21 48 56.5	1.2	19.5	1.8
16	4 41 9.89	0.40	1.50	21 49 25.7	1.2	19.4	1.8
17	4 41 19.84	0.43	1.50	21 49 56.4	1.3	19.3	1.8
18	4 41 30.61	0.47	1.49	21 50 28.4	1.4	19.2	1.8
19	4 41 42.20	0.50	1.48	21 51 1.9	1.4	19.2	1.8
20	4 41 54.59	0.53	1.48	21 51 36.9	1.5	19.1	1.8
21	4 42 7.79	0.57	1.47	21 52 13.2	1.5	19.0	1.8
22	4 42 21.79	0.60	1.47	21 52 50.8	1.6	19.0	1.8
23	4 42 36.59	0.63	1.47	21 53 29.8	1.7	18.9	1.8
24	4 42 52.17	0.67	1.46	21 54 10.1	1.7	18.8	1.7
25	4 43 8.54	0.70	1.46	21 54 51.7	1.8	18.8	1.7
26	4 43 25.69	0.73	1.45	21 55 34.6	1.8	18.7	1.7
27	4 43 43.61	0.76	1.45	21 56 18.7	1.9	18.7	1.7
28	4 44 2.30	0.79	1.44	21 57 4.0	1.9	18.6	1.7
Mar. 1	4 44 21.75	0.83	1.44	21 57 50.5	2.0	18.6	1.7
2	4 44 41.96	0.86	1.44	21 58 38.1	2.0	18.5	1.7
3	4 45 2.92	0.89	1.43	21 59 26.9	2.1	18.5	1.7
4	4 45 24.62	0.92	1.43	22 0 16.7	2.1	18.4	1.7
5	4 45 47.05	0.95	1.43	22 1 7.5	2.1	18.4	1.7
6	4 46 10.21	0.98	1.42	22 1 59.4	2.2	18.3	1.7
7	4 46 34.09	1.01	1.41	22 2 52.3	2.2	18.2	1.7
8	4 46 58.69	1.04	1.40	22 3 46.1	2.3	18.1	1.7
9	4 47 23.99	1.07	1.40	22 4 40.8	2.3	18.0	1.7
10	4 47 49.98	1.10	1.40	22 5 36.4	2.3	18.0	1.7
11	4 48 16.65	1.13	1.39	22 6 32.8	2.4	17.9	1.7
12	4 48 44.01	1.15	1.39	22 7 30.0	2.4	17.9	1.7
13	4 49 12.04	1.18	1.39	22 8 27.9	2.4	17.9	1.7
14	4 49 40.72	1.21	1.38	22 9 26.6	2.5	17.8	1.7
15	4 50 10.06	1.24	1.37	22 10 25.9	2.5	17.7	1.6
16	4 50 40.05	1.26	1.37	22 11 25.9	2.5	17.7	1.6
17	4 51 10.67	1.29	1.37	22 12 26.5	2.5	17.6	1.6
18	4 51 41.92	1.32	1.37	22 13 27.7	2.6	17.6	1.6
19	4 52 13.79	1.34	1.36	22 14 29.5	2.6	17.5	1.6
20	4 52 46.27	1.37	1.36	22 15 31.8	2.6	17.5	1.6
21	4 53 19.35	1.39	1.36	22 16 34.5	2.6	17.4	1.6
22	4 53 53.04	1.42	1.36	22 17 37.7	2.6	17.4	1.6
23	4 54 27.32	1.44	1.35	22 18 41.3	2.7	17.3	1.6
24	4 55 2.17	+ 1.46	1.34	22 19 45.3	+ 2.7	17.2	1.6

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>South. ° ' "</i>	<i>°</i>
Mar. 24	4 54 55.13	22 19 32.5	7280292	4 48.5	85 38 24.8	0 18 6.7	7092865
25	4 55 30.53	22 20 36.9	7292735	4 45.2	85 43 33.3	0 17 59.9	7093159
26	4 56 6.50	22 21 41.6	7305083	4 41.9	85 48 41.8	0 17 53.0	7093453
27	4 56 43.04	22 22 46.6	7317332	4 38.5	85 53 50.1	0 17 46.1	7093747
28	4 57 20.14	22 23 51.9	7329480	4 35.2	85 58 58.5	0 17 39.3	7094041
29	4 57 57.79	22 24 57.3	7341527	4 31.9	86 4 6.8	0 17 32.4	7094335
30	4 58 35.99	22 26 2.9	7353470	4 28.6	86 9 15.1	0 17 25.5	7094629
31	4 59 14.72	22 27 8.7	7365307	4 25.3	86 14 23.3	0 17 18.6	7094924
Apr. 1	4 59 53.99	22 28 14.6	7377037	4 22.0	86 19 31.5	0 17 11.7	7095218
2	5 0 33.77	22 29 20.5	7388657	4 18.8	86 24 39.6	0 17 4.8	7095513
3	5 1 14.07	22 30 26.5	7400167	4 15.5	86 29 47.7	0 16 58.0	7095808
4	5 1 54.88	22 31 32.4	7411565	4 12.3	86 34 55.8	0 16 51.1	7096103
5	5 2 36.19	22 32 38.3	7422850	4 9.0	86 40 3.8	0 16 44.2	7096398
6	5 3 17.99	22 33 44.1	7434019	4 5.8	86 45 11.8	0 16 37.3	7096693
7	5 4 0.27	22 34 49.8	7445072	4 2.5	86 50 19.7	0 16 30.4	7096989
8	5 4 43.02	22 35 55.3	7456008	3 59.3	86 55 27.6	0 16 23.5	7097284
9	5 5 26.24	22 37 0.6	7466825	3 56.1	87 0 35.5	0 16 16.6	7097580
10	5 6 9.92	22 38 5.7	7477523	3 52.9	87 5 43.3	0 16 9.7	7097876
11	5 6 54.04	22 39 10.5	7488100	3 49.7	87 10 51.1	0 16 2.8	7098172
12	5 7 38.61	22 40 15.1	7498557	3 46.5	87 15 58.8	0 15 55.9	7098467
13	5 8 23.61	22 41 19.3	7508891	3 43.3	87 21 6.5	0 15 49.0	7098763
14	5 9 9.03	22 42 23.2	7519103	3 40.1	87 26 14.2	0 15 42.1	7099060
15	5 9 54.87	22 43 26.8	7529192	3 37.0	87 31 21.8	0 15 35.2	7099356
16	5 10 41.12	22 44 29.9	7539157	3 33.8	87 36 29.4	0 15 28.3	7099652
17	5 11 27.77	22 45 32.6	7548999	3 30.7	87 41 36.9	0 15 21.4	7099949
18	5 12 14.82	22 46 34.8	7558715	3 27.5	87 46 44.4	0 15 14.5	7100245
19	5 13 2.26	22 47 36.5	7568307	3 24.4	87 51 51.8	0 15 7.6	7100542
20	5 13 50.08	22 48 37.8	7577774	3 21.2	87 56 59.3	0 15 0.7	7100839
21	5 14 38.29	22 49 38.4	7587114	3 18.1	88 2 6.6	0 14 53.8	7101136
22	5 15 26.86	22 50 38.5	7596326	3 15.0	88 7 13.9	0 14 46.9	7101432
23	5 16 15.79	22 51 38.0	7605411	3 11.9	88 12 21.2	0 14 40.1	7101729
24	5 17 5.09	22 52 36.8	7614367	3 8.7	88 17 28.5	0 14 33.1	7102027
25	5 17 54.74	22 53 35.0	7623193	3 5.6	88 22 35.7	0 14 26.2	7102324
26	5 18 44.73	22 54 32.4	7631889	3 2.5	88 27 42.8	0 14 19.3	7102621
27	5 19 35.07	22 55 29.2	7640455	2 59.4	88 32 50.0	0 14 12.4	7102918
28	5 20 25.74	22 56 25.2	7648888	2 56.3	88 37 57.0	0 14 5.4	7103216
29	5 21 16.73	22 57 20.4	7657190	2 53.3	88 43 4.1	0 13 58.5	7103513
30	5 22 8.05	22 58 14.9	7665358	2 50.2	88 48 11.1	0 13 51.6	7103811
May 1	5 22 59.68	22 59 8.6	7673393	2 47.1	88 53 18.0	0 13 44.7	7104109
2	5 23 51.63	23 0 1.4	7681294	2 44.0	88 58 25.0	0 13 37.8	7104407
3	5 24 43.87	23 0 53.3	7689061	2 41.0	89 3 31.8	0 13 30.9	7104704
4	5 25 36.40	23 1 44.3	7696692	2 37.9	89 8 38.7	0 13 23.9	7105002

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
				<i>North.</i>			
	<i>h m s</i>	<i>+ "</i>	<i>"</i>	<i>° ' "</i>	<i>+ "</i>	<i>"</i>	<i>"</i>
Mar. 24	4 55 2.17	+ 1.46	1.34	22 19 45.3	+ 2.7	17.2	1.6
25	4 55 37.61	1.49	1.34	22 20 49.7	2.7	17.2	1.6
26	4 56 13.61	1.51	1.33	22 21 54.3	2.7	17.2	1.6
27	4 56 50.17	1.54	1.32	22 22 59.2	2.7	17.1	1.6
28	4 57 27.29	1.56	1.32	22 24 4.4	2.7	17.1	1.6
29	4 58 4.96	1.58	1.32	22 25 9.7	2.7	17.1	1.6
30	4 58 43.17	1.60	1.31	22 26 15.2	2.7	17.0	1.6
31	4 59 21.91	1.63	1.31	22 27 20.8	2.7	17.0	1.6
Apr. 1	5 0 1.19	1.65	1.31	22 28 26.5	2.7	16.9	1.6
2	5 0 40.98	1.67	1.31	22 29 32.3	2.7	16.9	1.6
3	5 1 21.28	1.69	1.31	22 30 38.1	2.7	16.8	1.6
4	5 2 2.08	1.71	1.31	22 31 43.9	2.7	16.8	1.6
5	5 2 43.38	1.73	1.30	22 32 49.7	2.7	16.7	1.6
6	5 3 25.17	1.75	1.30	22 33 55.3	2.7	16.7	1.5
7	5 4 7.44	1.77	1.30	22 35 0.8	2.7	16.7	1.5
8	5 4 50.17	1.79	1.29	22 36 6.1	2.7	16.6	1.5
9	5 5 33.37	1.81	1.29	22 37 11.3	2.7	16.6	1.5
10	5 6 17.02	1.83	1.29	22 38 16.2	2.7	16.5	1.5
11	5 7 1.12	1.85	1.29	22 39 20.9	2.7	16.5	1.5
12	5 7 45.66	1.86	1.28	22 40 25.2	2.7	16.4	1.5
13	5 8 30.62	1.88	1.28	22 41 29.3	2.7	16.4	1.5
14	5 9 16.01	1.90	1.27	22 42 33.0	2.6	16.3	1.5
15	5 10 1.81	1.92	1.27	22 43 36.3	2.6	16.3	1.5
16	5 10 48.02	1.93	1.27	22 44 39.2	2.6	16.3	1.5
17	5 11 34.63	1.95	1.26	22 45 41.7	2.6	16.2	1.5
18	5 12 21.63	1.97	1.26	22 46 43.7	2.6	16.2	1.5
19	5 13 9.02	1.98	1.26	22 47 45.3	2.6	16.2	1.5
20	5 13 56.80	2.00	1.26	22 48 46.3	2.5	16.1	1.5
21	5 14 44.94	2.01	1.26	22 49 46.7	2.5	16.1	1.5
22	5 15 33.46	2.03	1.25	22 50 46.6	2.5	16.0	1.5
23	5 16 22.34	2.04	1.25	22 51 45.9	2.5	16.0	1.5
24	5 17 11.58	2.06	1.25	22 52 44.5	2.4	16.0	1.5
25	5 18 1.16	2.07	1.25	22 53 42.4	2.4	15.9	1.5
26	5 18 51.09	2.09	1.25	22 54 39.7	2.4	15.9	1.5
27	5 19 41.36	2.10	1.25	22 55 36.2	2.3	15.9	1.5
28	5 20 31.96	2.12	1.24	22 56 32.0	2.3	15.9	1.5
29	5 21 22.89	2.13	1.24	22 57 27.1	2.3	15.9	1.5
30	5 22 14.14	2.14	1.24	22 58 21.3	2.2	15.9	1.5
May 1	5 23 5.70	2.15	1.23	22 59 14.7	2.2	15.8	1.5
2	5 23 57.56	2.17	1.23	23 0 7.3	2.2	15.8	1.5
3	5 24 49.72	2.18	1.23	23 0 59.0	2.1	15.8	1.5
4	5 25 42.18	+ 2.19	1.22	23 1 49.9	+ 2.1	15.7	1.5

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Veet.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	North.		°			South.	°
May 4	h m s	° ' "	°	h m	° ' "	° ' "	°
4	5 25 36.40	23 1 44.3	.7696692	2 37.9	89 8 38.7	0 13 23.9	.7105002
5	5 26 29.22	23 2 34.4	.7704187	2 34.9	89 13 45.4	0 13 17.0	.7105301
6	5 27 22.32	23 3 23.6	.7711546	2 31.8	89 18 52.2	0 13 10.1	.7105599
7	5 28 15.69	23 4 11.8	.7718767	2 28.8	89 23 58.9	0 13 3.2	.7105897
8	5 29 9.32	23 4 58.9	.7725852	2 25.7	89 29 5.6	0 12 56.3	.7106196
9	5 30 3.20	23 5 45.1	.7732799	2 22.7	89 34 12.2	0 12 49.3	.7106494
10	5 30 57.34	23 6 30.2	.7739609	2 19.7	89 39 18.8	0 12 42.4	.7106793
11	5 31 51.72	23 7 14.3	.7746282	2 16.6	89 44 25.4	0 12 35.5	.7107091
12	5 32 46.34	23 7 57.3	.7752818	2 13.6	89 49 31.9	0 12 28.6	.7107390
13	5 33 41.19	23 8 39.3	.7759217	2 10.6	89 54 38.4	0 12 21.6	.7107688
14	5 34 36.26	23 9 20.2	.7765478	2 7.5	89 59 44.8	0 12 14.7	.7107987
15	5 35 31.56	23 9 59.9	.7771602	2 4.5	90 4 51.2	0 12 7.8	.7108286
16	5 36 27.07	23 10 38.6	.7777588	2 1.5	90 9 57.5	0 12 0.9	.7108585
17	5 37 22.78	23 11 16.1	.7783438	1 58.5	90 15 3.8	0 11 53.9	.7108884
18	5 38 18.70	23 11 52.4	.7789150	1 55.5	90 20 10.1	0 11 47.0	.7109183
19	5 39 14.81	23 12 27.5	.7794725	1 52.5	90 25 16.3	0 11 40.1	.7109482
20	5 40 11.12	23 13 1.4	.7800162	1 49.5	90 30 22.5	0 11 33.2	.7109781
21	5 41 7.61	23 13 34.2	.7805461	1 46.5	90 35 28.6	0 11 26.2	.7110081
22	5 42 4.28	23 14 5.6	.7810622	1 43.5	90 40 34.7	0 11 19.3	.7110380
23	5 43 1.14	23 14 35.9	.7815644	1 40.5	90 45 40.8	0 11 12.4	.7110679
24	5 43 58.16	23 15 4.9	.7820528	1 37.5	90 50 46.8	0 11 5.5	.7110979
25	5 44 55.35	23 15 32.7	.7825273	1 34.6	90 55 52.8	0 10 58.5	.7111278
26	5 45 52.71	23 15 59.2	.7829878	1 31.6	91 0 58.7	0 10 51.6	.7111578
27	5 46 50.22	23 16 24.4	.7834343	1 28.6	91 6 4.6	0 10 44.6	.7111878
28	5 47 47.88	23 16 48.3	.7838668	1 25.6	91 11 10.5	0 10 37.7	.7112178
29	5 48 45.68	23 17 10.9	.7842853	1 22.7	91 16 16.3	0 10 30.8	.7112478
30	5 49 43.62	23 17 32.1	.7846897	1 19.7	91 21 22.0	0 10 23.8	.7112778
31	5 50 41.70	23 17 52.0	.7850800	1 16.7	91 26 27.8	0 10 16.9	.7113078
June 1	5 51 39.90	23 18 10.5	.7854561	1 13.8	91 31 33.5	0 10 9.9	.7113378
2	5 52 38.21	23 18 27.7	.7858181	1 10.8	91 36 39.1	0 10 3.0	.7113678
3	5 53 36.64	23 18 43.5	.7861659	1 7.8	91 41 44.7	0 9 56.1	.7113978
4	5 54 35.18	23 18 57.9	.7864997	1 4.9	91 46 50.3	0 9 49.1	.7114279
5	5 55 33.82	23 19 10.9	.7868192	1 1.9	91 51 55.8	0 9 42.2	.7114579
6	5 56 32.55	23 19 22.5	.7871246	0 58.9	91 57 1.3	0 9 35.3	.7114880
7	5 57 31.36	23 19 32.8	.7874158	0 56.0	92 2 6.7	0 9 28.3	.7115180
8	5 58 30.26	23 19 41.6	.7876930	0 53.0	92 7 12.1	0 9 21.4	.7115481
9	5 59 29.23	23 19 49.0	.7879560	0 50.1	92 12 17.5	0 9 14.5	.7115782
10	6 0 28.28	23 19 55.1	.7882050	0 47.1	92 17 22.7	0 9 7.5	.7116082
11	6 1 27.39	23 19 59.7	.7884399	0 44.2	92 22 28.0	0 9 0.6	.7116383
12	6 2 26.56	23 20 2.9	.7886608	0 41.2	92 27 33.2	0 8 53.6	.7116684
13	6 3 25.79	23 20 4.8	.7888676	0 38.3	92 32 38.4	0 8 46.7	.7116985
14	6 4 25.07	23 20 5.2	.7890605	0 35.3	92 37 43.5	0 8 39.8	.7117286

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
<i>North.</i>							
May 4	^h 5 ^m 25 ^s 42.18	+ 2.19	1.22	23 1 49.9	+ 2.1	15.7	1.5
5	5 26 34.92	2.20	1.22	23 2 39.8	2.1	15.7	1.5
6	5 27 27.93	2.21	1.22	23 3 28.7	2.0	15.7	1.5
7	5 28 21.21	2.23	1.22	23 4 16.7	2.0	15.7	1.5
8	5 29 14.76	2.24	1.22	23 5 3.7	1.9	15.6	1.4
9	5 30 8.56	2.25	1.22	23 5 49.6	1.9	15.6	1.4
10	5 31 2.60	2.26	1.22	23 6 34.5	1.9	15.6	1.4
11	5 31 56.89	2.27	1.22	23 7 18.4	1.8	15.6	1.4
12	5 32 51.42	2.28	1.21	23 8 1.3	1.8	15.5	1.4
13	5 33 46.17	2.29	1.21	23 8 43.1	1.7	15.5	1.4
14	5 34 41.15	2.30	1.21	23 9 23.8	1.7	15.5	1.4
15	5 35 36.35	2.30	1.21	23 10 3.4	1.6	15.5	1.4
16	5 36 31.76	2.31	1.20	23 10 41.8	1.6	15.4	1.4
17	5 37 27.38	2.32	1.20	23 11 19.1	1.5	15.4	1.4
18	5 38 23.20	2.33	1.20	23 11 55.3	1.5	15.4	1.4
19	5 39 19.21	2.34	1.20	23 12 30.2	1.4	15.4	1.4
20	5 40 15.41	2.35	1.19	23 13 4.0	1.4	15.3	1.4
21	5 41 11.80	2.35	1.19	23 13 36.5	1.3	15.3	1.4
22	5 42 8.37	2.36	1.19	23 14 7.9	1.3	15.3	1.4
23	5 43 5.11	2.37	1.19	23 14 38.0	1.2	15.3	1.4
24	5 44 2.03	2.38	1.19	23 15 6.8	1.2	15.3	1.4
25	5 44 59.11	2.38	1.19	23 15 34.4	1.1	15.3	1.4
26	5 45 56.36	2.39	1.19	23 16 0.8	1.1	15.2	1.4
27	5 46 53.76	2.39	1.19	23 16 25.9	1.0	15.2	1.4
28	5 47 51.31	2.40	1.19	23 16 49.7	1.0	15.2	1.4
29	5 48 49.00	2.41	1.19	23 17 12.1	0.9	15.2	1.4
30	5 49 46.83	2.41	1.19	23 17 33.2	0.9	15.2	1.4
31	5 50 44.79	2.42	1.19	23 17 53.0	0.8	15.2	1.4
June 1	5 51 42.88	2.42	1.18	23 18 11.4	0.7	15.1	1.4
2	5 52 41.08	2.43	1.18	23 18 28.5	0.7	15.1	1.4
3	5 53 39.40	2.43	1.18	23 18 44.2	0.6	15.1	1.4
4	5 54 37.82	2.44	1.18	23 18 58.5	0.6	15.1	1.4
5	5 55 36.34	2.44	1.18	23 19 11.4	0.5	15.1	1.4
6	5 56 34.95	2.44	1.18	23 19 23.0	0.5	15.1	1.4
7	5 57 33.65	2.45	1.18	23 19 33.1	0.4	15.1	1.4
8	5 58 32.43	2.45	1.18	23 19 41.9	0.3	15.1	1.4
9	5 59 31.29	2.45	1.17	23 19 49.3	0.3	15.0	1.4
10	6 0 30.21	2.46	1.17	23 19 55.3	0.2	15.0	1.4
11	6 1 29.21	2.46	1.17	23 19 59.8	0.2	15.0	1.4
12	6 2 28.26	2.46	1.17	23 20 3.0	+ 0.1	15.0	1.4
13	6 3 27.36	2.46	1.17	23 20 4.8	0.0	15.0	1.4
14	6 4 26.52	+ 2.47	1.17	23 20 5.2	0.0	15.0	1.4

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>South. ° ' "</i>	<i>°</i>
June 14	6 42 50.7	23 20 5.2	7890605	0 35.3	92 37 43.5	0 8 39.8	7117286
15	6 5 24.39	23 20 4.2	7892394	0 32.4	92 42 48.8	0 8 32.8	7117587
16	6 6 23.76	23 20 1.8	7894043	0 29.5	92 47 53.8	0 8 25.9	7117888
17	6 7 23.17	23 19 57.9	7895552	0 26.5	92 52 58.8	0 8 18.9	7118189
18	6 8 22.61	23 19 52.6	7896922	0 23.6	92 58 3.8	0 8 12.0	7118490
19	6 9 22.08	23 19 45.9	7898151	0 20.6	93 3 8.7	0 8 5.1	7118791
20	6 10 21.57	23 19 37.7	7899241	0 17.7	93 8 13.6	0 7 58.1	7119093
21	6 11 21.08	23 19 28.2	7900190	0 14.7	93 13 18.5	0 7 51.2	7119394
22	6 12 20.61	23 19 17.1	7900999	0 11.8	93 18 23.3	0 7 44.2	7119695
23	6 13 20.14	23 19 4.7	7901667	0 8.8	93 23 28.1	0 7 37.3	7119996
24	6 14 19.68	23 18 50.8	7902194	0 5.9	93 28 32.8	0 7 30.4	7120298
25	6 15 19.21	23 18 35.5	7902580	0 2.9	93 33 37.5	0 7 23.4	7120599
26	6 16 18.74	23 18 18.8	7902824	{ 2.3 }	93 38 42.1	0 7 16.5	7120901
27	6 17 18.25	23 18 0.6	7902927	23 54.1	93 43 46.7	0 7 9.5	7121203
28	6 18 17.75	23 17 41.1	7902889	23 51.2	93 48 51.3	0 7 2.6	7121504
29	6 19 17.22	23 17 20.1	7902709	23 48.2	93 53 55.8	0 6 55.6	7121806
30	6 20 16.66	23 16 57.7	7902387	23 45.3	93 59 0.3	0 6 48.7	7122107
July 1	6 21 16.07	23 16 33.9	7901924	23 42.3	94 4 4.7	0 6 41.8	7122409
2	6 22 15.43	23 16 8.7	7901320	23 39.4	94 9 9.1	0 6 34.8	7122711
3	6 23 14.75	23 15 42.2	7900574	23 36.4	94 14 13.4	0 6 27.9	7123013
4	6 24 14.01	23 15 14.2	7899686	23 33.5	94 19 17.7	0 6 20.9	7123315
5	6 25 13.21	23 14 44.9	7898658	23 30.5	94 24 22.0	0 6 14.0	7123617
6	6 26 12.35	23 14 14.2	7897488	23 27.6	94 29 26.2	0 6 7.1	7123919
7	6 27 11.41	23 13 42.2	7896178	23 24.6	94 34 30.4	0 6 0.1	7124221
8	6 28 10.40	23 13 8.8	7894728	23 21.6	94 39 34.5	0 5 53.2	7124523
9	6 29 9.31	23 12 34.1	7893137	23 18.7	94 44 38.6	0 5 46.3	7124825
10	6 30 8.12	23 11 58.1	7891407	23 15.7	94 49 42.7	0 5 39.3	7125127
11	6 31 6.85	23 11 20.8	7889538	23 12.8	94 54 46.7	0 5 32.4	7125429
12	6 32 5.48	23 10 42.2	7887531	23 9.8	94 59 50.6	0 5 25.4	7125731
13	6 33 4.01	23 10 2.3	7885384	23 6.9	95 4 54.5	0 5 18.5	7126034
14	6 34 2.43	23 9 21.1	7883099	23 3.9	95 9 58.4	0 5 11.6	7126336
15	6 35 0.74	23 8 38.7	7880676	23 0.9	95 15 2.2	0 5 4.6	7126638
16	6 35 58.94	23 7 55.0	7878114	22 57.9	95 20 6.0	0 4 57.7	7126940
17	6 36 57.02	23 7 10.1	7875413	22 55.0	95 25 9.7	0 4 50.8	7127242
18	6 37 54.98	23 6 23.9	7872574	22 52.0	95 30 13.4	0 4 43.8	7127544
19	6 38 52.82	23 5 36.6	7869596	22 49.0	95 35 17.1	0 4 36.9	7127847
20	6 39 50.52	23 4 48.0	7866480	22 46.0	95 40 20.7	0 4 30.0	7128149
21	6 40 48.09	23 3 58.2	7863225	22 43.1	95 45 24.3	0 4 23.0	7128451
22	6 41 45.51	23 3 7.2	7859831	22 40.1	95 50 27.8	0 4 16.1	7128754
23	6 42 42.78	23 2 15.1	7856298	22 37.1	95 55 31.3	0 4 9.2	7129056
24	6 43 39.90	23 1 21.8	7852626	22 34.1	96 0 34.7	0 4 2.2	7129358
25	6 44 36.85	23 0 27.4	7848815	22 31.1	96 5 38.1	0 3 55.3	7129661

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
<i>North.</i>							
June 14	^h 6 ^m 4 ^s 26.52	^s + 2.47	^s 1.17	[°] 23 ['] 20 ["] 5.2	["] 0.0	["] 15.0	["] 1.4
15	6 5 25.73	2.47	1.17	23 20 4.1	- 0.1	15.0	1.4
16	6 6 24.98	2.47	1.17	23 20 1.7	0.1	15.0	1.4
17	6 7 24.26	2.47	1.17	23 19 57.8	0.2	15.0	1.4
18	6 8 23.58	2.47	1.17	23 19 52.5	0.3	15.0	1.4
19	6 9 22.93	2.47	1.17	23 19 45.8	0.3	15.0	1.4
20	6 10 22.30	2.47	1.17	23 19 37.6	0.4	15.0	1.4
21	6 11 21.69	2.48	1.17	23 19 28.1	0.4	15.0	1.4
22	6 12 21.10	2.48	1.17	23 19 17.1	0.5	15.0	1.4
23	6 13 20.51	2.48	1.17	23 19 4.6	0.5	15.0	1.4
24	6 14 19.92	2.48	1.17	23 18 50.8	0.6	15.0	1.4
25	{ 6 15 19.33 }	{ 2.48 }	{ 1.17 }	{ 23 18 41.3 }	{ 0.7 }	{ 15.0 }	{ 1.4 }
26	6 17 18.13	2.47	1.17	23 18 0.7	0.8	15.0	1.4
27	6 18 17.50	2.47	1.17	23 17 41.2	0.8	15.0	1.4
28	6 19 16.85	2.47	1.17	23 17 20.2	0.9	15.0	1.4
29	6 20 16.17	2.47	1.17	23 16 57.9	1.0	15.0	1.4
30	6 21 15.46	2.47	1.17	23 16 34.2	1.0	15.0	1.4
July 1	6 22 14.70	2.47	1.17	23 16 9.1	1.1	15.0	1.4
2	6 23 13.90	2.47	1.17	23 15 42.6	1.1	15.0	1.4
3	6 24 13.04	2.46	1.17	23 15 14.7	1.2	15.0	1.4
4	6 25 12.12	2.46	1.17	23 14 45.4	1.2	15.0	1.4
5	6 26 11.13	2.46	1.17	23 14 14.8	1.3	15.0	1.4
6	6 27 10.08	2.45	1.17	23 13 42.9	1.4	15.0	1.4
7	6 28 8.95	2.45	1.17	23 13 9.7	1.4	15.0	1.4
8	6 29 7.74	2.45	1.17	23 12 35.1	1.5	15.0	1.4
9	6 30 6.44	2.44	1.17	23 11 59.2	1.5	15.0	1.4
10	6 31 5.05	2.44	1.17	23 11 22.0	1.6	15.0	1.4
11	6 32 3.56	2.44	1.17	23 10 43.5	1.6	15.0	1.4
12	6 33 1.97	2.43	1.17	23 10 3.7	1.7	15.0	1.4
13	6 34 0.27	2.43	1.17	23 9 22.7	1.7	15.0	1.4
14	6 34 58.47	2.42	1.17	23 8 40.4	1.8	15.0	1.4
15	6 35 56.55	2.42	1.18	23 7 56.8	1.8	15.1	1.4
16	6 36 54.52	2.41	1.18	23 7 12.1	1.9	15.1	1.4
17	6 37 52.37	2.41	1.18	23 6 26.1	1.9	15.1	1.4
18	6 38 50.09	2.40	1.18	23 5 38.8	2.0	15.1	1.4
19	6 39 47.68	2.40	1.18	23 4 50.4	2.0	15.1	1.4
20	6 40 45.13	2.39	1.18	23 4 0.8	2.1	15.1	1.4
21	6 41 42.44	2.38	1.18	23 3 10.0	2.1	15.1	1.4
22	6 42 39.60	2.38	1.18	23 2 18.0	2.2	15.1	1.4
23	6 43 36.61	2.37	1.18	23 1 24.9	2.2	15.2	1.4
24	6 44 33.46	2.37	1.18	23 0 30.7	2.3	15.2	1.4
25	6 45 30.14	+ 2.36	1.18	22 59 35.4	- 2.3	15.2	1.4

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>South. ° ' "</i>	<i>°</i>
July 25	6 44 36.85	23 0 27.4	7848815	22 31.1	96 5 38.1	0 3 55.3	7129661
26	6 45 33.64	22 59 31.9	7844865	22 28.1	96 10 41.5	0 3 48.4	7129964
27	6 46 30.26	22 58 35.3	7840775	22 25.1	96 15 44.8	0 3 41.4	7130266
28	6 47 26.70	22 57 37.6	7836548	22 22.1	96 20 48.0	0 3 34.5	7130569
29	6 48 22.95	22 56 38.9	7832181	22 19.1	96 25 51.3	0 3 27.6	7130871
30	6 49 19.01	22 55 39.2	7827676	22 16.1	96 30 54.5	0 3 20.6	7131174
Aug. 31	6 50 14.88	22 54 38.4	7823032	22 13.1	96 35 57.6	0 3 13.7	7131476
1	6 51 10.54	22 53 36.7	7818251	22 10.1	96 41 0.7	0 3 6.8	7131779
2	6 52 5.99	22 52 34.0	7813332	22 7.1	96 46 3.7	0 2 59.9	7132082
3	6 53 1.23	22 51 30.4	7808276	22 4.1	96 51 6.7	0 2 52.9	7132384
4	6 53 56.25	22 50 25.9	7803084	22 1.1	96 56 9.7	0 2 46.0	7132687
5	6 54 51.03	22 49 20.5	7797756	21 58.0	97 1 12.6	0 2 39.1	7132990
6	6 55 45.59	22 48 14.3	7792292	21 55.0	97 6 15.5	0 2 32.1	7133292
7	6 56 39.90	22 47 7.2	7786692	21 52.0	97 11 18.3	0 2 25.2	7133595
8	6 57 33.97	22 45 59.2	7780959	21 48.9	97 16 21.1	0 2 18.3	7133897
9	6 58 27.78	22 44 50.5	7775091	21 45.9	97 21 23.8	0 2 11.4	7134200
10	6 59 21.35	22 43 41.0	7769089	21 42.8	97 26 26.5	0 2 4.4	7134502
11	7 0 14.66	22 42 30.7	7762955	21 39.8	97 31 29.1	0 1 57.5	7134805
12	7 1 7.70	22 41 19.7	7756687	21 36.7	97 36 31.7	0 1 50.6	7135108
13	7 2 0.47	22 40 8.0	7750287	21 33.7	97 41 34.3	0 1 43.7	7135410
14	7 2 52.97	22 38 55.6	7743755	21 30.6	97 46 36.8	0 1 36.8	7135713
15	7 3 45.19	22 37 42.6	7737090	21 27.5	97 51 39.3	0 1 29.8	7136016
16	7 4 37.13	22 36 28.9	7730293	21 24.5	97 56 41.7	0 1 22.9	7136319
17	7 5 28.78	22 35 14.6	7723365	21 21.4	98 1 44.1	0 1 16.0	7136622
18	7 6 20.14	22 33 59.8	7716305	21 18.3	98 6 46.5	0 1 9.1	7136924
19	7 7 11.19	22 32 44.5	7709113	21 15.2	98 11 48.8	0 1 2.2	7137227
20	7 8 1.93	22 31 28.6	7701790	21 12.1	98 16 51.0	0 0 55.1	7137530
21	7 8 52.36	22 30 12.2	7694336	21 9.0	98 21 53.2	0 0 48.2	7137833
22	7 9 42.47	22 28 55.4	7686752	21 5.9	98 26 55.4	0 0 41.3	7138136
23	7 10 32.25	22 27 38.2	7679037	21 2.8	98 31 57.5	0 0 34.4	7138439
24	7 11 21.69	22 26 20.5	7671192	20 59.7	98 36 59.6	0 0 27.6	7138741
25	7 12 10.79	22 25 2.5	7663217	20 56.6	98 42 1.7	0 0 20.7	7139044
26	7 12 59.54	22 23 44.2	7655114	20 53.4	98 47 3.7	0 0 13.8	7139347
27	7 13 47.93	22 22 25.6	7646882	20 50.3	98 52 5.6	0 0 6.8	7139650
28	7 14 35.96	22 21 6.7	7638523	20 47.2	98 57 7.5	0 0 0.1	7139953
29	7 15 23.62	22 19 47.6	7630037	20 44.0	99 2 9.4	0 0 7.0	7140256
30	7 16 10.89	22 18 28.3	7621425	20 40.9	99 7 11.2	0 0 13.9	7140559
31	7 16 57.78	22 17 8.9	7612688	20 37.7	99 12 13.0	0 0 20.8	7140862
Sept. 1	7 17 44.29	22 15 49.3	7603827	20 34.5	99 17 14.8	0 0 27.7	7141165
2	7 18 30.39	22 14 29.7	7594844	20 31.4	99 22 16.4	0 0 34.6	7141468
3	7 19 16.09	22 13 10.0	7585738	20 28.2	99 27 18.1	0 0 41.5	7141771
4	7 20 1.38	22 11 50.3	7576512	20 25.0	99 32 19.7	0 0 48.4	7142074

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
<div> <div>North.</div> <div>° ' "</div> </div>							
July 25	^{h m s} 6 45 30.14	^s + 2.36	^s 1.18	^{° ' "} 22 59 35.4	["] - 2.3	["] 15.2	["] 1.4
26	6 46 26.65	2.35	1.18	22 58 38.9	2.4	15.2	1.4
27	6 47 22.98	2.34	1.18	22 57 41.4	2.4	15.2	1.4
28	6 48 19.13	2.34	1.18	22 56 42.9	2.5	15.2	1.4
29	6 49 15.09	2.33	1.18	22 55 43.4	2.5	15.2	1.4
30	6 50 10.86	2.32	1.19	22 54 42.8	2.5	15.3	1.4
31	6 51 6.42	2.31	1.19	22 53 41.3	2.6	15.3	1.4
Aug. 1	6 52 1.77	2.30	1.19	22 52 38.8	2.6	15.3	1.4
2	6 52 56.91	2.29	1.19	22 51 35.4	2.7	15.3	1.4
3	6 53 51.83	2.28	1.19	22 50 31.1	2.7	15.3	1.4
4	6 54 46.52	2.27	1.20	22 49 26.0	2.7	15.4	1.4
5	6 55 40.97	2.26	1.20	22 48 19.9	2.8	15.4	1.4
6	6 56 35.19	2.25	1.20	22 47 13.0	2.8	15.4	1.4
7	6 57 29.17	2.24	1.20	22 46 5.3	2.8	15.4	1.4
8	6 58 22.90	2.23	1.20	22 44 56.8	2.9	15.4	1.4
9	6 59 16.37	2.22	1.21	22 43 47.5	2.9	15.5	1.4
10	7 0 9.59	2.21	1.21	22 42 37.5	2.9	15.5	1.4
11	7 1 2.54	2.20	1.21	22 41 26.7	3.0	15.5	1.4
12	7 1 55.23	2.19	1.21	22 40 15.2	3.0	15.5	1.4
13	7 2 47.65	2.18	1.21	22 39 3.0	3.0	15.5	1.4
14	7 3 39.79	2.17	1.21	22 37 50.2	3.0	15.6	1.4
15	7 4 31.65	2.15	1.21	22 36 36.7	3.1	15.6	1.4
16	7 5 23.22	2.14	1.21	22 35 22.7	3.1	15.6	1.4
17	7 6 14.50	2.12	1.22	22 34 8.1	3.1	15.7	1.5
18	7 7 5.47	2.11	1.22	22 32 52.9	3.1	15.7	1.5
19	7 7 56.14	2.10	1.22	22 31 37.3	3.2	15.7	1.5
20	7 8 46.50	2.09	1.22	22 30 21.2	3.2	15.7	1.5
21	7 9 36.54	2.08	1.22	22 29 4.6	3.2	15.8	1.5
22	7 10 26.25	2.06	1.22	22 27 47.5	3.2	15.8	1.5
23	7 11 15.63	2.05	1.22	22 26 30.1	3.2	15.8	1.5
24	7 12 4.66	2.04	1.23	22 25 12.3	3.2	15.9	1.5
25	7 12 53.35	2.02	1.23	22 23 54.2	3.3	15.9	1.5
26	7 13 41.68	2.01	1.23	22 22 35.8	3.3	15.9	1.5
27	7 14 29.65	1.99	1.23	22 21 17.1	3.3	15.9	1.5
28	7 15 17.26	1.98	1.23	22 19 58.2	3.3	15.9	1.5
29	7 16 4.48	1.96	1.23	22 18 39.1	3.3	15.9	1.5
30	7 16 51.32	1.94	1.24	22 17 19.9	3.3	16.0	1.5
31	7 17 37.78	1.93	1.24	22 16 0.5	3.3	16.0	1.5
Sept. 1	7 18 23.84	1.91	1.24	22 14 41.1	3.3	16.0	1.5
2	7 19 9.49	1.89	1.24	22 13 21.6	3.3	16.1	1.5
3	7 19 54.74	1.88	1.24	22 12 2.1	3.3	16.1	1.5
4	7 20 39.58	+ 1.86	1.24	22 10 42.6	- 3.3	16.1	1.5

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	North. ° ' "	°	h m	° ' "	North. ° ' "	°
Sept. 4	7 20 1.38	22 11 50.3	7576512	20 25.0	99 32 19.7	0 048.4	7142074
5	7 20 46.25	22 10 30.7	7567166	20 21.8	99 37 21.3	0 055.3	7142378
6	7 21 30.70	22 9 11.1	7557701	20 18.6	99 42 22.8	0 1 2.2	7142681
7	7 22 14.72	22 7 51.6	7548119	20 15.4	99 47 24.3	0 1 9.1	7142984
8	7 22 58.31	22 6 32.2	7538419	20 12.2	99 52 25.7	0 1 16.0	7143288
9	7 23 41.45	22 5 13.0	7528604	20 8.9	99 57 27.1	0 1 22.9	7143591
10	7 24 24.15	22 3 54.0	7518675	20 5.7	100 2 28.5	0 1 29.8	7143894
11	7 25 6.39	22 2 35.2	7508631	20 2.5	100 7 29.8	0 1 36.7	7144197
12	7 25 48.17	22 1 16.7	7498474	19 59.2	100 12 31.1	0 1 43.6	7144501
13	7 26 29.49	21 59 58.5	7488205	19 56.0	100 17 32.3	0 1 50.5	7144804
14	7 27 10.33	21 58 40.7	7477824	19 52.7	100 22 33.5	0 1 57.4	7145108
15	7 27 50.70	21 57 23.2	7467332	19 49.4	100 27 34.6	0 2 4.3	7145411
16	7 28 30.58	21 56 6.1	7456730	19 46.2	100 32 35.7	0 2 11.2	7145714
17	7 29 9.97	21 54 49.5	7446020	19 42.9	100 37 36.8	0 2 18.1	7146017
18	7 29 48.86	21 53 33.4	7435202	19 39.6	100 42 37.8	0 2 24.9	7146321
19	7 30 27.24	21 52 17.8	7424277	19 36.3	100 47 38.8	0 2 31.8	7146624
20	7 31 5.10	21 51 2.8	7413247	19 33.0	100 52 39.7	0 2 38.7	7146927
21	7 31 42.44	21 49 48.4	7402114	19 29.7	100 57 40.6	0 2 45.6	7147231
22	7 32 19.24	21 48 34.7	7390877	19 26.3	101 2 41.4	0 2 52.5	7147534
23	7 32 55.50	21 47 21.7	7379539	19 23.0	101 7 42.3	0 2 59.4	7147837
24	7 33 31.22	21 46 9.5	7368102	19 19.6	101 12 43.0	0 3 6.2	7148141
25	7 34 6.37	21 44 58.0	7356568	19 16.3	101 17 43.7	0 3 13.1	7148444
26	7 34 40.96	21 43 47.4	7344938	19 12.9	101 22 44.4	0 3 20.0	7148747
27	7 35 14.97	21 42 37.6	7333214	19 9.5	101 27 45.1	0 3 26.9	7149050
28	7 35 48.40	21 41 28.7	7321399	19 6.2	101 32 45.7	0 3 33.7	7149354
29	7 36 21.24	21 40 20.8	7309494	19 2.8	101 37 46.2	0 3 40.6	7149657
30	7 36 53.49	21 39 13.9	7297502	18 59.4	101 42 46.7	0 3 47.5	7149960
Oct. 1	7 37 25.14	21 38 8.0	7285424	18 56.0	101 47 47.2	0 3 54.4	7150264
2	7 37 56.17	21 37 3.2	7273264	18 52.5	101 52 47.6	0 4 1.2	7150567
3	7 38 26.59	21 35 59.5	7261022	18 49.1	101 57 48.0	0 4 8.1	7150870
4	7 38 56.39	21 34 57.0	7248702	18 45.7	102 2 48.3	0 4 15.0	7151173
5	7 39 25.55	21 33 55.7	7236306	18 42.2	102 7 48.6	0 4 21.8	7151476
6	7 39 54.08	21 32 55.6	7223836	18 38.7	102 12 48.9	0 4 28.7	7151779
7	7 40 21.97	21 31 56.8	7211294	18 35.2	102 17 49.1	0 4 35.5	7152082
8	7 40 49.21	21 30 59.3	7198683	18 31.8	102 22 49.3	0 4 42.4	7152385
9	7 41 15.79	21 30 3.1	7186004	18 28.3	102 27 49.4	0 4 49.3	7152688
10	7 41 41.72	21 29 8.3	7173261	18 24.7	102 32 49.5	0 4 56.1	7152991
11	7 42 6.97	21 28 14.9	7160456	18 21.2	102 37 49.6	0 5 3.0	7153294
12	7 42 31.55	21 27 22.9	7147591	18 17.7	102 42 49.6	0 5 9.8	7153597
13	7 42 55.45	21 26 32.4	7134668	18 14.1	102 47 49.6	0 5 16.7	7153900
14	7 43 18.66	21 25 43.4	7121690	18 10.6	102 52 49.5	0 5 23.5	7154203
15	7 43 41.17	21 24 56.0	7108660	18 7.0	102 57 49.4	0 5 30.4	7154505

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sen. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
	^h ^m ^s	⁺ ["]	["]	[°] ['] ["]	⁺ ["]	["]	["]
Sept. 4	7 20 39.58	+ 1.86	1.24	22 10 42.6	- 3.3	16.1	1.5
5	7 21 23.99	1.84	1.25	22 9 23.1	3.3	16.2	1.5
6	7 22 7.98	1.82	1.25	22 8 3.8	3.3	16.2	1.5
7	7 22 51.54	1.81	1.26	22 6 44.6	3.3	16.3	1.5
8	7 23 34.65	1.79	1.26	22 5 25.5	3.3	16.3	1.5
9	7 24 17.33	1.77	1.26	22 4 6.7	3.3	16.3	1.5
10	7 24 59.55	1.75	1.27	22 2 48.0	3.3	16.4	1.5
11	7 25 41.31	1.73	1.27	22 1 29.7	3.3	16.4	1.5
12	7 26 22.61	1.71	1.27	22 0 11.6	3.2	16.5	1.5
13	7 27 3.45	1.69	1.27	21 58 53.8	3.2	16.5	1.5
14	7 27 43.80	1.67	1.27	21 57 36.5	3.2	16.5	1.5
15	7 28 23.68	1.65	1.28	21 56 19.5	3.2	16.6	1.5
16	7 29 3.07	1.63	1.28	21 55 3.0	3.2	16.6	1.5
17	7 29 41.96	1.61	1.29	21 53 46.9	3.2	16.7	1.5
18	7 30 20.34	1.59	1.29	21 52 31.4	3.1	16.7	1.5
19	7 30 58.21	1.57	1.30	21 51 16.5	3.1	16.8	1.6
20	7 31 35.56	1.55	1.30	21 50 2.1	3.1	16.8	1.6
21	7 32 12.38	1.52	1.30	21 48 48.5	3.1	16.9	1.6
22	7 32 48.66	1.50	1.30	21 47 35.5	3.0	16.9	1.6
23	7 33 24.39	1.48	1.31	21 46 23.3	3.0	17.0	1.6
24	7 33 59.57	1.45	1.31	21 45 11.8	3.0	17.0	1.6
25	7 34 34.19	1.43	1.32	21 44 1.2	2.9	17.1	1.6
26	7 35 8.24	1.41	1.32	21 42 51.5	2.9	17.1	1.6
27	7 35 41.71	1.38	1.33	21 41 42.6	2.9	17.2	1.6
28	7 36 14.59	1.36	1.33	21 40 34.6	2.8	17.2	1.6
29	7 36 46.88	1.33	1.34	21 39 27.6	2.8	17.2	1.6
30	7 37 18.58	1.31	1.34	21 38 21.7	2.7	17.2	1.6
Oct. 1	7 37 49.67	1.28	1.35	21 37 16.8	2.7	17.3	1.6
2	7 38 20.15	1.26	1.35	21 36 13.0	2.6	17.3	1.6
3	7 38 50.01	1.23	1.35	21 35 10.4	2.6	17.4	1.6
4	7 39 19.24	1.20	1.35	21 34 9.0	2.6	17.4	1.6
5	7 39 47.84	1.18	1.36	21 33 8.8	2.5	17.5	1.6
6	7 40 15.80	1.15	1.36	21 32 9.8	2.4	17.5	1.6
7	7 40 43.12	1.12	1.36	21 31 12.1	2.4	17.6	1.6
8	7 41 9.79	1.10	1.36	21 30 15.8	2.3	17.6	1.6
9	7 41 35.80	1.07	1.36	21 29 20.8	2.3	17.7	1.6
10	7 42 1.15	1.04	1.37	21 28 27.2	2.2	17.8	1.6
11	7 42 25.83	1.01	1.37	21 27 35.0	2.1	17.8	1.7
12	7 42 49.83	0.99	1.38	21 26 44.3	2.1	17.9	1.7
13	7 43 13.15	0.96	1.38	21 25 55.1	2.0	17.9	1.7
14	7 43 35.77	0.93	1.38	21 25 7.4	2.0	18.0	1.7
15	7 43 57.70	+ 0.90	1.39	21 24 21.2	- 1.9	18.1	1.7

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North. ° ' "</i>	<i>°</i>
Oct. 15	7 43 41.17	21 24 56.0	7108660	18 7.0	102 57 49.4	5 30.4	7154505
16	7 44 2.98	21 24 10.1	7095580	18 3.5	103 2 49.3	5 37.2	7154808
17	7 44 24.07	21 23 25.9	7082452	17 59.9	103 7 49.1	5 44.0	7155111
18	7 44 44.45	21 22 43.3	7069281	17 56.3	103 12 48.8	5 50.9	7155414
19	7 45 4.10	21 22 2.5	7056069	17 52.6	103 17 48.6	5 57.7	7155716
20	7 45 23.01	21 21 23.3	7042819	17 49.0	103 22 48.3	6 4.6	7156019
21	7 45 41.18	21 20 46.0	7029534	17 45.4	103 27 47.9	6 11.4	7156322
22	7 45 58.60	21 20 10.5	7016218	17 41.7	103 32 47.5	6 18.2	7156624
23	7 46 15.27	21 19 36.8	7002875	17 38.0	103 37 47.1	6 25.1	7156927
24	7 46 31.17	21 19 5.0	6989508	17 34.4	103 42 46.6	6 31.9	7157229
25	7 46 46.31	21 18 35.1	6976123	17 30.7	103 47 46.1	6 38.7	7157532
26	7 47 0.67	21 18 7.2	6962721	17 27.0	103 52 45.5	6 45.6	7157834
27	7 47 14.24	21 17 41.2	6949308	17 23.3	103 57 44.9	6 52.4	7158136
28	7 47 27.03	21 17 17.2	6935888	17 19.5	104 2 44.3	6 59.2	7158439
29	7 47 39.02	21 16 55.3	6922465	17 15.8	104 7 43.6	7 6.0	7158741
30	7 47 50.22	21 16 35.3	6909044	17 12.0	104 12 42.9	7 12.8	7159044
31	7 48 0.62	21 16 17.5	6895628	17 8.3	104 17 42.1	7 19.7	7159346
Nov. 1	7 48 10.21	21 16 1.7	6882223	17 4.5	104 22 41.3	7 26.5	7159648
2	7 48 18.99	21 15 48.0	6868833	17 0.7	104 27 40.5	7 33.3	7159950
3	7 48 26.96	21 15 36.4	6855463	16 56.9	104 32 39.6	7 40.1	7160252
4	7 48 34.12	21 15 27.0	6842117	16 53.0	104 37 38.7	7 46.9	7160554
5	7 48 40.46	21 15 19.7	6828799	16 49.2	104 42 37.8	7 53.7	7160857
6	7 48 45.98	21 15 14.6	6815513	16 45.4	104 47 36.8	8 0.6	7161159
7	7 48 50.67	21 15 11.6	6802264	16 41.5	104 52 35.8	8 7.4	7161461
8	7 48 54.54	21 15 10.8	6789056	16 37.6	104 57 34.7	8 14.2	7161763
9	7 48 57.58	21 15 12.2	6775893	16 33.7	105 2 33.6	8 21.0	7162065
10	7 48 59.80	21 15 15.7	6762781	16 29.8	105 7 32.4	8 27.8	7162366
11	7 49 1.17	21 15 21.5	6749723	16 25.9	105 12 31.2	8 34.6	7162668
12	7 49 1.71	21 15 29.5	6736726	16 22.0	105 17 30.0	8 41.4	7162970
13	7 49 1.42	21 15 39.6	6723794	16 18.1	105 22 28.7	8 48.2	7163271
14	7 49 0.28	21 15 52.0	6710932	16 14.1	105 27 27.4	8 55.0	7163573
15	7 48 58.30	21 16 6.6	6698145	16 10.1	105 32 26.1	9 1.8	7163874
16	7 48 55.48	21 16 23.4	6685439	16 6.1	105 37 24.7	9 8.6	7164176
17	7 48 51.82	21 16 42.4	6672819	16 2.1	105 42 23.3	9 15.3	7164477
18	7 48 47.31	21 17 3.6	6660291	15 58.1	105 47 21.8	9 22.1	7164779
19	7 48 41.96	21 17 27.1	6647860	15 54.1	105 52 20.3	9 28.9	7165080
20	7 48 35.76	21 17 52.7	6635533	15 50.0	105 57 18.7	9 35.7	7165382
21	7 48 28.72	21 18 20.6	6623315	15 46.0	106 2 17.1	9 42.5	7165683
22	7 48 20.84	21 18 50.6	6611212	15 41.9	106 7 15.5	9 49.2	7165984
23	7 48 12.11	21 19 22.8	6599231	15 37.8	106 12 13.8	9 56.0	7166286
24	7 48 2.56	21 19 57.1	6587377	15 33.7	106 17 12.1	10 2.8	7166587
25	7 47 52.17	21 20 33.6	6575656	15 29.6	106 22 10.4	10 9.6	7166888

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
				° ' "	"	"	"
Oct. 15	h m s	s	s	21 24 21.2	— 1.9	18.1	1.7
16	7 43 57.70	+ 0.90	1.39	21 23 36.7	1.8	18.1	1.7
17	7 44 18.92	0.87	1.39	21 22 53.8	1.8	18.2	1.7
18	7 44 39.42	0.84	1.40	21 22 12.6	1.7	18.2	1.7
19	7 44 59.20	0.81	1.40	21 21 33.2	1.6	18.3	1.7
20	7 45 18.25	0.78	1.41	21 20 55.4	1.5	18.3	1.7
21	7 45 36.57	0.75	1.41	21 20 19.5	1.5	18.4	1.7
22	7 45 54.14	0.72	1.41	21 19 45.5	1.4	18.4	1.7
23	7 46 10.96	0.69	1.42	21 19 13.3	1.3	18.5	1.7
24	7 46 27.03	0.65	1.42	21 18 42.9	1.2	18.5	1.7
25	7 46 42.33	0.62	1.42	21 18 14.5	1.1	18.6	1.7
26	7 46 56.86	0.59	1.43	21 17 48.1	1.1	18.6	1.7
27	7 47 10.61	0.56	1.43	21 17 23.6	1.0	18.7	1.7
28	7 47 23.58	0.52	1.44	21 17 1.2	0.9	18.7	1.7
29	7 47 35.76	0.49	1.44	21 16 40.7	0.8	18.8	1.7
30	7 47 47.15	0.46	1.45	21 16 22.3	0.7	18.9	1.8
31	7 47 57.75	0.43	1.45	21 16 6.0	0.6	18.9	1.8
Nov. 1	7 48 7.55	0.39	1.45	21 15 51.7	0.6	19.0	1.8
2	7 48 16.54	0.36	1.46	21 15 39.6	0.5	19.1	1.8
3	7 48 24.72	0.32	1.47	21 15 29.5	0.4	19.1	1.8
4	7 48 32.10	0.29	1.47	21 15 21.6	0.3	19.2	1.8
5	7 48 38.66	0.26	1.48	21 15 15.9	0.2	19.2	1.8
6	7 48 44.41	0.22	1.48	21 15 12.3	— 0.1	19.3	1.8
7	7 48 49.34	0.19	1.48	21 15 10.8	0.0	19.3	1.8
8	7 48 53.45	0.15	1.48	21 15 11.5	+ 0.1	19.4	1.8
9	7 48 56.74	0.12	1.49	21 15 14.4	0.2	19.5	1.8
10	7 48 59.20	0.09	1.49	21 15 19.5	0.3	19.6	1.8
11	7 49 0.84	0.05	1.50	21 15 26.7	0.3	19.6	1.8
12	7 49 1.64	+ 0.02	1.50	21 15 36.2	0.4	19.7	1.8
13	7 49 1.61	— 0.02	1.51	21 15 47.8	0.5	19.7	1.8
14	7 49 0.74	0.05	1.51	21 16 1.6	0.6	19.8	1.8
15	7 48 59.04	0.09	1.52	21 16 17.6	0.7	19.8	1.8
16	7 48 56.50	0.12	1.52	21 16 35.9	0.8	19.8	1.8
17	7 48 53.12	0.16	1.52	21 16 56.3	0.9	19.9	1.8
18	7 48 48.90	0.19	1.53	21 17 19.0	1.0	20.0	1.9
19	7 48 43.84	0.23	1.54	21 17 43.8	1.1	20.0	1.9
20	7 48 37.94	0.26	1.54	21 18 10.8	1.2	20.1	1.9
21	7 48 31.21	0.30	1.55	21 18 40.0	1.3	20.1	1.9
22	7 48 23.63	0.33	1.55	21 19 11.4	1.4	20.2	1.9
23	7 48 15.22	0.37	1.55	21 19 44.9	1.4	20.3	1.9
24	7 48 5.98	0.40	1.56	21 20 20.6	1.5	20.3	1.9
25	7 47 55.91	0.44	1.56	21 20 58.3	+ 1.6	20.4	1.9
26	7 47 45.02	— 0.47	1.56				

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North. ° ' "</i>	<i>°</i>
Nov. 25	7 47 52.17	21 20 33.6	6575656	15 29.6	106 22 10.4	0 10 9.6	7166888
26	7 47 40.95	21 21 12.2	6564075	15 25.5	106 27 8.6	0 10 16.3	7167189
27	7 47 28.91	21 21 52.9	6552640	15 21.3	106 32 6.8	0 10 23.1	7167490
28	7 47 16.05	21 22 35.6	6541357	15 17.2	106 37 4.9	0 10 29.9	7167791
29	7 47 2.38	21 23 20.3	6530231	15 13.0	106 42 3.0	0 10 36.6	7168092
30	7 46 47.91	21 24 7.0	6519269	15 8.8	106 47 1.0	0 10 43.4	7168393
Dec. 1	7 46 32.66	21 24 55.7	6508477	15 4.7	106 51 59.0	0 10 50.1	7168694
2	7 46 16.62	21 25 46.2	6497860	15 0.4	106 56 57.0	0 10 56.9	7168994
3	7 45 59.82	21 26 38.6	6487425	14 56.2	107 1 54.9	0 11 3.7	7169295
4	7 45 42.25	21 27 32.8	6477177	14 52.0	107 6 52.8	0 11 10.4	7169595
5	7 45 23.93	21 28 28.8	6467121	14 47.8	107 11 50.7	0 11 17.1	7169896
6	7 45 4.87	21 29 26.5	6457263	14 43.5	107 16 48.5	0 11 23.9	7170196
7	7 44 45.08	21 30 25.8	6447608	14 39.2	107 21 46.3	0 11 30.6	7170496
8	7 44 24.56	21 31 26.8	6438162	14 34.9	107 26 44.0	0 11 37.4	7170797
9	7 44 3.33	21 32 29.3	6428929	14 30.7	107 31 41.7	0 11 44.1	7171097
10	7 43 41.40	21 33 33.4	6419914	14 26.3	107 36 39.4	0 11 50.8	7171397
11	7 43 18.78	21 34 38.9	6411124	14 22.0	107 41 37.0	0 11 57.6	7171697
12	7 42 55.48	21 35 45.9	6402565	14 17.7	107 46 34.5	0 12 4.3	7171997
13	7 42 31.52	21 36 54.2	6394240	14 13.4	107 51 32.1	0 12 11.0	7172297
14	7 42 6.91	21 38 3.9	6386156	14 9.0	107 56 29.6	0 12 17.7	7172597
15	7 41 41.67	21 39 14.9	6378317	14 4.7	108 1 27.0	0 12 24.5	7172897
16	7 41 15.80	21 40 27.1	6370729	14 0.3	108 6 24.4	0 12 31.2	7173197
17	7 40 49.33	21 41 40.5	6363398	13 55.9	108 11 21.8	0 12 37.9	7173496
18	7 40 22.28	21 42 55.0	6356329	13 51.5	108 16 19.1	0 12 44.6	7173796
19	7 39 54.66	21 44 10.6	6349526	13 47.2	108 21 16.4	0 12 51.3	7174096
20	7 39 26.49	21 45 27.1	6342995	13 42.7	108 26 13.6	0 12 58.0	7174395
21	7 38 57.79	21 46 44.5	6336741	13 38.3	108 31 10.9	0 13 4.7	7174695
22	7 38 28.57	21 48 2.8	6330768	13 33.9	108 36 8.0	0 13 11.4	7174994
23	7 37 58.87	21 49 21.8	6325081	13 29.5	108 41 5.1	0 13 18.1	7175294
24	7 37 28.70	21 50 41.5	6319683	13 25.1	108 46 2.2	0 13 24.8	7175593
25	7 36 58.08	21 52 1.8	6314579	13 20.6	108 50 59.3	0 13 31.5	7175893
26	7 36 27.04	21 53 22.7	6309773	13 16.2	108 55 56.3	0 13 38.2	7176192
27	7 35 55.60	21 54 44.1	6305268	13 11.7	109 0 53.2	0 13 44.9	7176491
28	7 35 23.79	21 56 5.8	6301067	13 7.2	109 5 50.1	0 13 51.6	7176790
29	7 34 51.63	21 57 27.9	6297173	13 2.8	109 10 47.0	0 13 58.3	7177089
30	7 34 19.13	21 58 50.3	6293589	12 58.3	109 15 43.9	0 14 4.9	7177389
31	7 33 46.34	22 0 12.8	6290318	12 53.8	109 20 40.6	0 14 11.6	7177688
32	7 33 13.27	22 1 35.5	6287361	12 49.3	109 25 37.4	0 14 18.3	7177986

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
<i>North.</i>							
Nov. 25	^h 7 ^m 47 ^s 45.02	— 0.47	1.56	^o 21 ['] 20 ["] 58.3	+ 1.6	20.4	1.9
26	7 47 33.30	0.51	1.56	21 21 38.1	1.7	20.4	1.9
27	7 47 20.77	0.54	1.57	21 22 20.0	1.8	20.5	1.9
28	7 47 7.43	0.57	1.57	21 23 3.9	1.9	20.5	1.9
29	7 46 53.30	0.61	1.58	21 23 49.7	2.0	20.6	1.9
30	7 46 38.38	0.64	1.59	21 24 37.5	2.0	20.7	1.9
Dec. 1	7 46 22.68	0.67	1.59	21 25 27.2	2.1	20.7	1.9
2	7 46 6.21	0.70	1.59	21 26 18.8	2.2	20.8	1.9
3	7 45 48.98	0.73	1.59	21 27 12.1	2.3	20.8	1.9
4	7 45 30.99	0.76	1.60	21 28 7.3	2.3	20.9	1.9
5	7 45 12.27	0.80	1.60	21 29 4.1	2.4	20.9	1.9
6	7 44 52.82	0.83	1.61	21 30 2.7	2.5	21.0	1.9
7	7 44 32.64	0.86	1.62	21 31 2.9	2.5	21.0	1.9
8	7 44 11.75	0.89	1.63	21 32 4.6	2.6	21.0	2.0
9	7 43 50.15	0.91	1.63	21 33 7.8	2.7	21.0	2.0
10	7 43 27.87	0.94	1.64	21 34 12.6	2.7	21.1	2.0
11	7 43 4.91	0.97	1.64	21 35 18.8	2.8	21.1	2.0
12	7 42 41.29	1.00	1.65	21 36 26.4	2.8	21.2	2.0
13	7 42 17.02	1.02	1.65	21 37 35.3	2.9	21.2	2.0
14	7 41 52.10	1.05	1.65	21 38 45.6	3.0	21.2	2.0
15	7 41 26.57	1.08	1.65	21 39 57.1	3.0	21.3	2.0
16	7 41 0.43	1.10	1.65	21 41 9.8	3.1	21.3	2.0
17	7 40 33.70	1.13	1.66	21 42 23.6	3.1	21.4	2.0
18	7 40 6.40	1.15	1.66	21 43 38.5	3.1	21.4	2.0
19	7 39 38.55	1.17	1.66	21 44 54.4	3.2	21.4	2.0
20	7 39 10.15	1.19	1.67	21 46 11.2	3.2	21.5	2.0
21	7 38 41.24	1.21	1.67	21 47 28.9	3.3	21.5	2.0
22	7 38 11.84	1.23	1.67	21 48 47.3	3.3	21.5	2.0
23	7 37 41.96	1.25	1.68	21 50 6.5	3.3	21.6	2.0
24	7 37 11.63	1.27	1.68	21 51 26.3	3.3	21.6	2.0
25	7 36 40.87	1.29	1.68	21 52 46.7	3.4	21.6	2.0
26	7 36 9.71	1.31	1.68	21 54 7.6	3.4	21.6	2.0
27	7 35 38.16	1.32	1.68	21 55 28.9	3.4	21.7	2.0
28	7 35 6.25	1.34	1.68	21 56 50.6	3.4	21.7	2.0
29	7 34 34.01	1.35	1.68	21 58 12.6	3.4	21.7	2.0
30	7 34 1.45	1.36	1.68	21 59 34.8	3.4	21.7	2.0
31	7 33 28.61	1.37	1.68	22 0 57.2	3.4	21.7	2.0
32	7 32 55.51	— 1.38	1.69	22 2 19.7	+ 3.4	21.8	2.0

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
<div> <div>h m s</div> <div>° ' "</div> <div>°</div> <div>h m</div> <div>° ' "</div> <div>°</div> </div>							
Jan. 1	8 54 40.54	18 11 9.8	9165833	14 9.8	127 52 6.3	0 39 36.6	9597192
2	8 54 24.94	18 12 22.5	9161512	14 5.6	127 54 18.4	0 39 42.1	9597284
3	8 54 9.04	18 13 36.2	9157332	14 1.4	127 56 30.6	0 39 47.6	9597376
4	8 53 52.86	18 14 50.9	9153295	13 57.2	127 58 42.7	0 39 53.1	9597468
5	8 53 36.41	18 16 6.5	9149404	13 53.0	128 0 54.8	0 39 58.7	9597560
6	8 53 19.69	18 17 23.0	9145659	13 48.8	128 3 6.9	0 40 4.2	9597652
7	8 53 2.72	18 18 40.3	9142064	13 44.6	128 5 19.0	0 40 9.7	9597744
8	8 52 45.51	18 19 58.5	9138620	13 40.3	128 7 31.1	0 40 15.3	9597836
9	8 52 28.06	18 21 17.4	9135328	13 36.1	128 9 43.2	0 40 20.8	9597929
10	8 52 10.39	18 22 36.9	9132190	13 31.9	128 11 55.2	0 40 26.3	9598021
11	8 51 52.51	18 23 57.2	9129208	13 27.6	128 14 7.3	0 40 31.8	9598114
12	8 51 34.42	18 25 18.0	9126382	13 23.4	128 16 19.4	0 40 37.3	9598206
13	8 51 16.15	18 26 39.4	9123714	13 19.2	128 18 31.4	0 40 42.9	9598299
14	8 50 57.69	18 28 1.3	9121206	13 14.9	128 20 43.5	0 40 48.4	9598391
15	8 50 39.06	18 29 23.6	9118858	13 10.7	128 22 55.5	0 40 53.9	9598484
16	8 50 20.27	18 30 46.4	9116672	13 6.4	128 25 7.6	0 40 59.4	9598577
17	8 50 1.33	18 32 9.5	9114648	13 2.2	128 27 19.6	0 41 4.9	9598670
18	8 49 42.25	18 33 32.9	9112787	12 57.9	128 29 31.6	0 41 10.4	9598763
19	8 49 23.04	18 34 56.6	9111090	12 53.7	128 31 43.6	0 41 15.9	9598856
20	8 49 3.71	18 36 20.5	9109558	12 49.4	128 33 55.6	0 41 21.4	9598949
21	8 48 44.27	18 37 44.6	9108193	12 45.2	128 36 7.6	0 41 26.9	9599042
22	8 48 24.73	18 39 8.9	9106993	12 40.9	128 38 19.6	0 41 32.5	9599135
23	8 48 5.11	18 40 33.2	9105962	12 36.7	128 40 31.6	0 41 38.0	9599229
24	8 47 45.41	18 41 57.6	9105098	12 32.4	128 42 43.6	0 41 43.5	9599322
25	8 47 25.65	18 43 22.0	9104403	12 28.2	128 44 55.6	0 41 49.0	9599416
26	8 47 5.83	18 44 46.3	9103877	12 23.9	128 47 7.6	0 41 54.5	9599509
27	8 46 45.97	18 46 10.6	9103520	12 19.6	128 49 19.5	0 42 0.0	9599603
28	8 46 26.08	18 47 34.7	9103334	12 15.4	128 51 31.5	0 42 5.5	9599697
29	8 46 6.17	18 48 58.6	9103317	12 11.1	128 53 43.4	0 42 11.0	9599791
30	8 45 46.25	18 50 22.3	9103471	12 6.8	128 55 55.4	0 42 16.5	9599885
Feb. 31	8 45 26.33	18 51 45.7	9103795	12 2.6	128 58 7.3	0 42 21.9	9599979
Feb. 1	8 45 6.44	18 53 8.8	9104289	11 58.3	129 0 19.2	0 42 27.4	9600073
2	8 44 46.57	18 54 31.5	9104953	11 54.1	129 2 31.2	0 42 32.9	9600167
3	8 44 26.74	18 55 53.8	9105787	11 49.8	129 4 43.1	0 42 38.4	9600261
4	8 44 6.96	18 57 15.6	9106789	11 45.5	129 6 55.0	0 42 43.9	9600355
5	8 43 47.25	18 58 36.9	9107960	11 41.3	129 9 6.9	0 42 49.4	9600449
6	8 43 27.62	18 59 57.6	9109299	11 37.0	129 11 18.8	0 42 54.9	9600543
7	8 43 8.08	19 1 17.7	9110804	11 32.8	129 13 30.7	0 43 0.4	9600638
8	8 42 48.64	19 2 35.1	9112475	11 28.5	129 15 42.6	0 43 5.9	9600732
9	8 42 29.32	19 3 57.9	9114311	11 24.3	129 17 54.4	0 43 11.3	9600827
10	8 42 10.11	19 5 13.9	9116310	11 20.0	129 20 6.3	0 43 16.8	9600921
11	8 41 51.04	19 6 31.2	9118471	11 15.8	129 22 18.2	0 43 22.3	9601016

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
<i>North.</i>							
Jan. 1	^{h m s} 8 54 31.37	^s - 0.65	^s 0.69	^{° ' "} 18 11 52.6	["] + 3.0	["] 9.1	["] 1.0
2	8 54 15.64	0.67	0.69	18 13 5.7	3.0	9.1	1.0
3	8 53 59.62	0.68	0.69	18 14 19.7	3.1	9.2	1.0
4	8 53 43.33	0.69	0.69	18 15 34.7	3.1	9.2	1.0
5	8 53 26.77	0.70	0.69	18 16 50.7	3.2	9.2	1.0
6	8 53 9.95	0.71	0.69	18 18 7.4	3.2	9.2	1.0
7	8 52 52.89	0.72	0.69	18 19 25.0	3.2	9.2	1.0
8	8 52 35.59	0.73	0.69	18 20 43.3	3.3	9.2	1.0
9	8 52 18.07	0.74	0.69	18 22 2.4	3.3	9.2	1.0
10	8 52 0.33	0.75	0.69	18 23 22.1	3.3	9.2	1.0
11	8 51 42.38	0.76	0.69	18 24 42.4	3.3	9.2	1.0
12	8 51 24.25	0.76	0.69	18 26 3.3	3.4	9.2	1.0
13	8 51 5.92	0.77	0.69	18 27 24.8	3.4	9.2	1.1
14	8 50 47.42	0.77	0.69	18 28 46.6	3.4	9.2	1.1
15	8 50 28.76	0.78	0.69	18 30 9.0	3.4	9.2	1.1
16	8 50 9.94	0.78	0.69	18 31 31.7	3.4	9.2	1.1
17	8 49 50.98	0.79	0.69	18 32 54.7	3.4	9.2	1.1
18	8 49 31.89	0.80	0.70	18 34 18.1	3.5	9.3	1.1
19	8 49 12.67	0.80	0.70	18 35 41.7	3.5	9.3	1.1
20	8 48 53.33	0.81	0.70	18 37 5.4	3.5	9.3	1.1
21	8 48 33.89	0.81	0.70	18 38 29.4	3.5	9.3	1.1
22	8 48 14.37	0.81	0.70	18 39 53.4	3.5	9.3	1.1
23	8 47 54.77	0.81	0.70	18 41 17.5	3.5	9.3	1.1
24	8 47 35.09	0.82	0.70	18 42 41.7	3.5	9.3	1.1
25	8 47 15.35	0.82	0.70	18 44 5.8	3.5	9.3	1.1
26	8 46 55.57	0.82	0.70	18 45 29.9	3.5	9.3	1.1
27	8 46 35.75	0.82	0.70	18 46 53.8	3.5	9.3	1.1
28	8 46 15.91	0.83	0.70	18 48 17.6	3.5	9.3	1.1
29	8 45 56.06	0.83	0.70	18 49 41.2	3.4	9.3	1.1
30	8 45 36.20	0.83	0.70	18 51 4.5	3.4	9.3	1.1
31	8 45 16.34	0.83	0.70	18 52 27.5	3.4	9.3	1.1
Feb. 1	8 44 56.52	0.83	0.70	18 53 50.1	3.4	9.3	1.1
2	8 44 36.73	0.83	0.70	18 55 12.4	3.4	9.3	1.1
3	8 44 16.98	0.82	0.70	18 56 34.2	3.3	9.3	1.1
4	8 43 57.30	0.82	0.70	18 57 55.5	3.3	9.3	1.1
5	8 43 37.68	0.82	0.70	18 59 16.3	3.3	9.3	1.1
6	8 43 18.15	0.82	0.70	19 0 36.4	3.3	9.3	1.1
7	8 42 58.72	0.81	0.70	19 1 56.0	3.3	9.3	1.1
8	8 42 39.39	0.81	0.69	19 3 14.9	3.2	9.2	1.1
9	8 42 20.18	0.80	0.69	19 4 33.0	3.2	9.2	1.1
10	8 42 1.09	0.80	0.69	19 5 50.5	3.2	9.2	1.1
11	8 41 42.14	- 0.79	0.69	19 7 7.2	+ 3.2	9.2	1.1

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North</i> <i>° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North</i> <i>° ' "</i>	<i>°</i>
Feb. 11	8 41 51.04	19 6 31.2	9118471	11 15.8	129 22 18.2	0 43 22.3	9601016
12	8 41 32.11	19 7 47.7	9120793	11 11.5	129 24 30.0	0 43 27.8	9601110
13	8 41 13.34	19 9 3.3	9123274	11 7.3	129 26 41.9	0 43 33.3	9601205
14	8 40 54.73	19 10 18.1	9125913	11 3.0	129 28 53.7	0 43 38.7	9601300
15	8 40 36.30	19 11 31.9	9128709	10 58.8	129 31 5.5	0 43 44.2	9601395
16	8 40 18.05	19 12 44.9	9131660	10 54.6	129 33 17.4	0 43 49.7	9601490
17	8 40 0.00	19 13 56.8	9134765	10 50.3	129 35 29.2	0 43 55.1	9601585
18	8 39 42.16	19 15 7.7	9138022	10 46.1	129 37 41.0	0 44 0.6	9601680
19	8 39 24.53	19 16 17.6	9141429	10 41.9	129 39 52.8	0 44 6.1	9601775
20	8 39 7.13	19 17 26.5	9144985	10 37.7	129 42 4.6	0 44 11.5	9601871
21	8 38 49.96	19 18 34.2	9148688	10 33.5	129 44 16.4	0 44 17.0	9601966
22	8 38 33.03	19 19 40.8	9152537	10 29.3	129 46 28.2	0 44 22.5	9602061
23	8 38 16.36	19 20 46.3	9156529	10 25.1	129 48 40.0	0 44 27.9	9602157
24	8 37 59.94	19 21 50.6	9160663	10 20.9	129 50 51.7	0 44 33.4	9602252
25	8 37 43.79	19 22 53.7	9164937	10 16.7	129 53 3.5	0 44 38.9	9602348
26	8 37 27.92	19 23 55.6	9169349	10 12.5	129 55 15.3	0 44 44.3	9602444
27	8 37 12.33	19 24 56.2	9173896	10 8.3	129 57 27.0	0 44 49.8	9602540
28	8 36 57.05	19 25 55.5	9178577	10 4.1	129 59 38.8	0 44 55.2	9602636
Mar. 1	8 36 42.06	19 26 53.5	9183390	9 59.9	130 1 50.5	0 45 0.7	9602732
2	8 36 27.39	19 27 50.2	9188332	9 55.7	130 4 2.2	0 45 6.1	9602828
3	8 36 13.04	19 28 45.5	9193401	9 51.6	130 6 14.0	0 45 11.6	9602924
4	8 35 59.03	19 29 39.4	9198595	9 47.4	130 8 25.7	0 45 17.1	9603020
5	8 35 45.35	19 30 31.9	9203910	9 43.2	130 10 37.4	0 45 22.5	9603116
6	8 35 32.01	19 31 23.0	9209345	9 39.1	130 12 49.1	0 45 28.0	9603213
7	8 35 19.03	19 32 12.6	9214896	9 34.9	130 15 0.8	0 45 33.4	9603309
8	8 35 6.41	19 33 0.8	9220562	9 30.8	130 17 12.5	0 45 38.9	9603406
9	8 34 54.15	19 33 47.5	9226338	9 26.7	130 19 24.2	0 45 44.3	9603502
10	8 34 42.27	19 34 32.7	9232224	9 22.5	130 21 35.8	0 45 49.7	9603599
11	8 34 30.76	19 35 16.4	9238215	9 18.4	130 23 47.5	0 45 55.2	9603695
12	8 34 19.64	19 35 58.6	9244308	9 14.3	130 25 59.2	0 46 0.6	9603792
13	8 34 8.90	19 36 39.2	9250502	9 10.2	130 28 10.8	0 46 6.1	9603889
14	8 33 58.56	19 37 18.3	9256792	9 6.1	130 30 22.4	0 46 11.5	9603986
15	8 33 48.61	19 37 55.8	9263177	9 2.0	130 32 34.1	0 46 17.0	9604083
16	8 33 39.06	19 38 31.7	9269654	8 57.9	130 34 45.7	0 46 22.4	9604180
17	8 33 29.92	19 39 6.1	9276219	8 53.9	130 36 57.4	0 46 27.8	9604277
18	8 33 21.19	19 39 38.9	9282871	8 49.8	130 39 9.0	0 46 33.3	9604375
19	8 33 12.86	19 40 10.1	9289607	8 45.7	130 41 20.6	0 46 38.7	9604472
20	8 33 4.95	19 40 39.7	9296424	8 41.7	130 43 32.2	0 46 44.1	9604569
21	8 32 57.46	19 41 7.8	9303319	8 37.6	130 45 43.8	0 46 49.6	9604667
22	8 32 50.40	19 41 34.2	9310291	8 33.6	130 47 55.4	0 46 55.0	9604764
23	8 32 43.76	19 41 59.1	9317335	8 29.5	130 50 7.0	0 47 0.4	9604862
24	8 32 37.54	19 42 22.3	9324451	8 25.5	130 52 18.6	0 47 5.9	9604959

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Std. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
				North.			
	^h ^m ^s	^s	^s	^o ['] ["]	["]	["]	["]
Feb. 11	8 41 42.14	- 0.79	0.69	19 7 7.2	+ 3.2	9.2	1.1
12	8 41 23.34	0.79	0.69	19 8 23.0	3.2	9.2	1.1
13	8 41 4.70	0.78	0.69	19 9 38.1	3.1	9.2	1.0
14	8 40 46.22	0.77	0.69	19 10 52.2	3.1	9.2	1.0
15	8 40 27.93	0.76	0.69	19 12 5.4	3.0	9.2	1.0
16	8 40 9.83	0.75	0.69	19 13 17.7	3.0	9.2	1.0
17	8 39 51.92	0.74	0.69	19 14 29.0	2.9	9.2	1.0
18	8 39 34.22	0.73	0.69	19 15 39.2	2.9	9.2	1.0
19	8 39 16.75	0.72	0.69	19 16 48.4	2.9	9.2	1.0
20	8 38 59.50	0.71	0.69	19 17 56.6	2.8	9.2	1.0
21	8 38 42.48	0.70	0.69	19 19 3.7	2.8	9.2	1.0
22	8 38 25.71	0.69	0.69	19 20 9.6	2.7	9.2	1.0
23	8 38 9.20	0.68	0.69	19 21 14.4	2.7	9.1	1.0
24	8 37 52.94	0.67	0.69	19 22 18.0	2.6	9.1	1.0
25	8 37 36.96	0.66	0.69	19 23 20.4	2.6	9.1	1.0
26	8 37 21.25	0.65	0.69	19 24 21.5	2.6	9.1	1.0
27	8 37 5.84	0.64	0.69	19 25 21.4	2.5	9.1	1.0
28	8 36 50.72	0.63	0.69	19 26 20.0	2.5	9.1	1.0
Mar. 1	8 36 35.91	0.62	0.69	19 27 17.3	2.4	9.1	1.0
2	8 36 21.41	0.60	0.69	19 28 13.2	2.4	9.1	1.0
3	8 36 7.24	0.58	0.69	19 29 7.8	2.3	9.1	1.0
4	8 35 53.40	0.57	0.69	19 30 1.0	2.3	9.1	1.0
5	8 35 39.90	0.55	0.68	19 30 52.7	2.2	9.0	1.0
6	8 35 26.75	0.54	0.68	19 31 43.1	2.2	9.0	1.0
7	8 35 13.94	0.52	0.68	19 32 32.0	2.1	9.0	1.0
8	8 35 1.50	0.51	0.68	19 33 19.5	2.0	9.0	1.0
9	8 34 49.43	0.49	0.68	19 34 5.4	2.0	9.0	1.0
10	8 34 37.73	0.48	0.68	19 34 49.9	1.9	9.0	1.0
11	8 34 26.40	0.46	0.68	19 35 32.9	1.8	9.0	1.0
12	8 34 15.46	0.45	0.68	19 36 14.4	1.7	8.9	1.0
13	8 34 4.90	0.44	0.68	19 36 54.3	1.6	8.9	1.0
14	8 33 54.74	0.42	0.68	19 37 32.7	1.6	8.9	1.0
15	8 33 44.97	0.40	0.68	19 38 9.5	1.5	8.9	1.0
16	8 33 35.60	0.38	0.68	19 38 44.8	1.4	8.9	1.0
17	8 33 26.63	0.37	0.68	19 39 18.5	1.4	8.9	1.0
18	8 33 18.08	0.35	0.68	19 39 50.6	1.3	8.9	1.0
19	8 33 9.92	0.33	0.68	19 40 21.1	1.2	8.9	1.0
20	8 33 2.19	0.31	0.67	19 40 50.1	1.2	8.8	1.0
21	8 32 54.87	0.29	0.67	19 41 17.5	1.1	8.8	1.0
22	8 32 47.98	0.27	0.67	19 41 43.3	1.0	8.8	1.0
23	8 32 41.51	0.25	0.67	19 42 7.5	1.0	8.8	1.0
24	8 32 35.46	- 0.24	0.67	19 42 30.1	+ 0.9	8.8	1.0

MEAN TIME.										
Month and Day.		Geocentric.				Heliocentric.				
		Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.		
		Noon.	Noon.	Noon.		Noon.	Noon.	Noon.		
		h m s	North. ° ' "	°	h m	° ' "	North. ° ' "	°		
Mar.	24	8 32 37.54	19 42 22.3	9324451	8 25.5	130 52 18.6	0 47 5.9	9604959		
	25	8 32 31.76	19 42 43.9	9331634	8 21.5	130 54 30.2	0 47 11.3	9605057		
	26	8 32 26.41	19 43 3.9	9338883	8 17.4	130 56 41.8	0 47 16.7	9605155		
	27	8 32 21.50	19 43 22.2	9346194	8 13.4	130 58 53.4	0 47 22.1	9605253		
	28	8 32 17.03	19 43 38.9	9353566	8 9.4	131 1 4.9	0 47 27.6	9605351		
	29	8 32 13.00	19 43 54.0	9360995	8 5.4	131 3 16.5	0 47 33.0	9605449		
	30	8 32 9.42	19 44 7.4	9368479	8 1.5	131 5 28.1	0 47 38.4	9605547		
	31	8 32 6.28	19 44 19.2	9376014	7 57.5	131 7 39.6	0 47 43.8	9605645		
	Apr.	1	8 32 3.59	19 44 29.3	9383599	7 53.5	131 9 51.2	0 47 49.2	9605743	
		2	8 32 1.35	19 44 37.8	9391230	7 49.5	131 12 2.7	0 47 54.6	9605841	
3		8 31 59.56	19 44 44.6	9398905	7 45.6	131 14 14.2	0 48 0.1	9605939		
4		8 31 58.22	19 44 49.7	9406620	7 41.6	131 16 25.8	0 48 5.5	9606038		
5		8 31 57.34	19 44 53.2	9414373	7 37.7	131 18 37.3	0 48 10.9	9606136		
6		8 31 56.91	19 44 55.0	9422161	7 33.7	131 20 48.8	0 48 16.3	9606235		
7		8 31 56.93	19 44 55.2	9429981	7 29.8	131 23 0.3	0 48 21.7	9606334		
8		8 31 57.41	19 44 53.7	9437830	7 25.9	131 25 11.8	0 48 27.1	9606432		
9		8 31 58.34	19 44 50.7	9445706	7 22.0	131 27 23.4	0 48 32.5	9606531		
10		8 31 59.72	19 44 45.9	9453606	7 18.1	131 29 34.9	0 48 37.9	9606629		
	11	8 32 1.54	19 44 39.6	9461528	7 14.2	131 31 46.4	0 48 43.3	9606728		
	12	8 32 3.82	19 44 31.6	9469468	7 10.3	131 33 57.9	0 48 48.7	9606827		
	13	8 32 6.54	19 44 21.9	9477424	7 6.4	131 36 9.4	0 48 54.1	9606926		
	14	8 32 9.71	19 44 10.7	9485395	7 2.5	131 38 20.9	0 48 59.5	9607025		
	15	8 32 13.32	19 43 57.8	9493377	6 58.6	131 40 32.4	0 49 4.9	9607124		
	16	8 32 17.38	19 43 43.3	9501369	6 54.8	131 42 43.9	0 49 10.3	9607223		
	17	8 32 21.87	19 43 27.2	9509368	6 50.9	131 44 55.3	0 49 15.7	9607322		
	18	8 32 26.80	19 43 9.5	9517373	6 47.1	131 47 6.8	0 49 21.1	9607422		
	19	8 32 32.17	19 42 50.3	9525381	6 43.2	131 49 18.3	0 49 26.4	9607521		
	20	8 32 37.97	19 42 29.4	9533390	6 39.4	131 51 29.7	0 49 31.8	9607620		
	21	8 32 44.21	19 42 7.0	9541398	6 35.6	131 53 41.2	0 49 37.2	9607720		
	22	8 32 50.88	19 41 43.1	9549402	6 31.8	131 55 52.7	0 49 42.6	9607819		
	23	8 32 57.98	19 41 17.5	9557400	6 27.9	131 58 4.1	0 49 48.0	9607919		
	24	8 33 5.50	19 40 50.4	9565391	6 24.1	132 0 15.5	0 49 53.4	9608019		
	25	8 33 13.46	19 40 21.8	9573372	6 20.3	132 2 27.0	0 49 58.7	9608118		
	26	8 33 21.84	19 39 51.6	9581341	6 16.5	132 4 38.4	0 50 4.1	9608218		
	27	8 33 30.64	19 39 19.8	9589296	6 12.8	132 6 49.8	0 50 9.5	9608318		
	28	8 33 39.87	19 38 46.5	9597235	6 9.0	132 9 1.3	0 50 14.9	9608417		
	29	8 33 49.51	19 38 11.5	9605155	6 5.2	132 11 12.7	0 50 20.2	9608517		
	30	8 33 59.57	19 37 35.0	9613056	6 1.4	132 13 24.1	0 50 25.6	9608617		
May	1	8 34 10.04	19 36 57.1	9620935	5 57.7	132 15 35.5	0 50 31.0	9608717		
	2	8 34 20.92	19 36 17.6	9628790	5 53.9	132 17 46.9	0 50 36.3	9608818		
	3	8 34 32.21	19 35 36.7	9636619	5 50.2	132 19 58.3	0 50 41.7	9608918		
	4	8 34 43.90	19 34 54.2	9644419	5 46.4	132 22 9.7	0 50 47.1	9609018		

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
				North.			
	^h ^m ^s	^s	^s	[°] ['] ["]	⁺ ["]	["]	["]
Mar. 24	8 32 35.46	- 0.24	0.67	19 42 30.1	+ 0.9	8.8	1.0
25	8 32 29.85	0.22	0.67	19 42 51.0	0.8	8.8	1.0
26	8 32 24.67	0.20	0.66	19 43 10.4	0.8	8.7	1.0
27	8 32 19.92	0.18	0.66	19 43 28.1	0.7	8.7	1.0
28	8 32 15.61	0.16	0.66	19 43 44.3	0.7	8.7	1.0
29	8 32 11.75	0.14	0.66	19 43 58.7	0.6	8.7	1.0
30	8 32 8.32	0.13	0.66	19 44 11.6	0.6	8.7	1.0
31	8 32 5.34	0.11	0.66	19 44 22.8	0.5	8.7	1.0
Apr. 1	8 32 2.80	0.09	0.65	19 44 32.3	0.5	8.6	1.0
2	8 32 0.72	0.07	0.65	19 44 40.2	0.4	8.6	1.0
3	8 31 59.08	0.05	0.65	19 44 46.4	0.3	8.6	1.0
4	8 31 57.89	0.03	0.65	19 44 51.0	0.2	8.6	1.0
5	8 31 57.16	- 0.02	0.65	19 44 53.9	+ 0.1	8.6	1.0
6	8 31 56.87	0.00	0.65	19 44 55.2	0.0	8.6	1.0
7	8 31 57.04	+ 0.02	0.65	19 44 54.9	0.0	8.5	1.0
8	8 31 57.65	0.04	0.65	19 44 52.9	- 0.1	8.5	1.0
9	8 31 58.71	0.06	0.65	19 44 49.4	0.2	8.5	1.0
10	8 32 0.23	0.08	0.65	19 44 44.2	0.3	8.5	1.0
11	8 32 2.18	0.10	0.65	19 44 37.3	0.4	8.5	1.0
12	8 32 4.59	0.11	0.65	19 44 28.9	0.4	8.5	1.0
13	8 32 7.44	0.13	0.64	19 44 18.8	0.5	8.4	1.0
14	8 32 10.73	0.15	0.64	19 44 7.1	0.5	8.4	1.0
15	8 32 14.46	0.17	0.64	19 43 53.8	0.6	8.4	1.0
16	8 32 18.63	0.19	0.64	19 43 38.8	0.6	8.4	1.0
17	8 32 23.23	0.21	0.64	19 43 22.3	0.7	8.4	1.0
18	8 32 28.27	0.22	0.64	19 43 4.2	0.8	8.4	1.0
19	8 32 33.75	0.24	0.63	19 42 44.6	0.8	8.3	1.0
20	8 32 39.66	0.26	0.63	19 42 23.4	0.9	8.3	1.0
21	8 32 45.99	0.28	0.63	19 42 0.6	0.9	8.3	1.0
22	8 32 52.76	0.29	0.63	19 41 36.3	1.0	8.3	1.0
23	8 32 59.96	0.31	0.63	19 41 10.4	1.0	8.3	0.9
24	8 33 7.58	0.33	0.63	19 40 42.9	1.1	8.3	0.9
25	8 33 15.63	0.34	0.62	19 40 14.0	1.1	8.3	0.9
26	8 33 24.10	0.36	0.62	19 39 43.4	1.2	8.3	0.9
27	8 33 32.99	0.38	0.62	19 39 11.4	1.3	8.3	0.9
28	8 33 42.30	0.39	0.62	19 38 37.7	1.4	8.3	0.9
29	8 33 52.02	0.41	0.62	19 38 2.4	1.4	8.3	0.9
30	8 34 2.16	0.43	0.62	19 37 25.6	1.5	8.3	0.9
May 1	8 34 12.71	0.45	0.62	19 36 47.4	1.6	8.2	0.9
2	8 34 23.66	0.47	0.62	19 36 7.7	1.6	8.2	0.9
3	8 34 35.01	0.48	0.62	19 35 26.5	1.7	8.2	0.9
4	8 34 46.77	+ 0.50	0.62	19 34 43.8	- 1.8	8.2	0.9

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
<div> <div>h m s</div> <div>North.</div> <div>° ' "</div> <div>°</div> <div>h m</div> <div>° ' "</div> <div>North.</div> <div>°</div> </div>							
May 4	8 34 43.90	19 34 54.2	.9644419	5 46.4	132 22 9.7	0 50 47.1	.9609018
5	8 34 55.98	19 34 10.2	.9652188	5 42.7	132 24 21.1	0 50 52.4	.9609118
6	8 35 8.47	19 33 24.8	.9659925	5 39.0	132 26 32.5	0 50 57.8	.9609219
7	8 35 21.35	19 32 37.8	.9667626	5 35.3	132 28 43.9	0 51 3.2	.9609320
8	8 35 34.61	19 31 49.4	.9675291	5 31.6	132 30 55.3	0 51 8.5	.9609420
9	8 35 48.26	19 30 59.5	.9682919	5 27.9	132 33 6.6	0 51 13.9	.9609521
10	8 36 2.29	19 30 8.2	.9690506	5 24.2	132 35 18.0	0 51 19.2	.9609621
11	8 36 16.69	19 29 15.5	.9698052	5 20.5	132 37 29.4	0 51 24.6	.9609722
12	8 36 31.47	19 28 21.3	.9705556	5 16.8	132 39 40.7	0 51 29.9	.9609823
13	8 36 46.61	19 27 25.8	.9713016	5 13.1	132 41 52.1	0 51 35.3	.9609924
14	8 37 2.12	19 26 28.8	.9720430	5 9.5	132 44 3.4	0 51 40.7	.9610025
15	8 37 17.98	19 25 30.5	.9727797	5 5.8	132 46 14.8	0 51 46.0	.9610126
16	8 37 34.21	19 24 30.8	.9735116	5 2.1	132 48 26.1	0 51 51.4	.9610227
17	8 37 50.78	19 23 29.7	.9742385	4 58.5	132 50 37.4	0 51 56.7	.9610329
18	8 38 7.70	19 22 27.3	.9749603	4 54.8	132 52 48.8	0 52 2.0	.9610430
19	8 38 24.96	19 21 23.5	.9756769	4 51.2	132 55 0.1	0 52 7.4	.9610531
20	8 38 42.56	19 20 18.4	.9763880	4 47.5	132 57 11.4	0 52 12.7	.9610633
21	8 39 0.50	19 19 11.9	.9770937	4 43.9	132 59 22.7	0 52 18.1	.9610734
22	8 39 18.77	19 18 4.1	.9777938	4 40.3	133 1 34.0	0 52 23.4	.9610836
23	8 39 37.37	19 16 55.0	.9784881	4 36.7	133 3 45.3	0 52 28.7	.9610937
24	8 39 56.29	19 15 44.5	.9791765	4 33.0	133 5 56.6	0 52 34.1	.9611039
25	8 40 15.53	19 14 32.7	.9798590	4 29.4	133 8 7.9	0 52 39.4	.9611141
26	8 40 35.10	19 13 19.7	.9805353	4 25.8	133 10 19.2	0 52 44.8	.9611242
27	8 40 54.97	19 12 5.3	.9812053	4 22.2	133 12 30.5	0 52 50.1	.9611344
28	8 41 15.16	19 10 49.7	.9818689	4 18.6	133 14 41.8	0 52 55.4	.9611446
29	8 41 35.65	19 9 32.8	.9825260	4 15.0	133 16 53.0	0 53 0.7	.9611548
30	8 41 56.44	19 8 14.7	.9831764	4 11.5	133 19 4.3	0 53 6.1	.9611650
31	8 42 17.53	19 6 55.3	.9838200	4 7.9	133 21 15.6	0 53 11.4	.9611753
June 1	8 42 38.91	19 5 34.7	.9844566	4 4.3	133 23 26.8	0 53 16.7	.9611855
2	8 43 0.58	19 4 12.9	.9850862	4 0.7	133 25 38.1	0 53 22.0	.9611957
3	8 43 22.54	19 2 49.8	.9857087	3 57.1	133 27 49.3	0 53 27.4	.9612059
4	8 43 44.77	19 1 25.6	.9863239	3 53.6	133 30 0.6	0 53 32.7	.9612162
5	8 44 7.27	19 0 0.1	.9869317	3 50.0	133 32 11.8	0 53 38.0	.9612264
6	8 44 30.04	18 58 33.4	.9875320	3 46.5	133 34 23.0	0 53 43.3	.9612367
7	8 44 53.07	18 57 5.6	.9881248	3 42.9	133 36 34.3	0 53 48.6	.9612469
8	8 45 16.36	18 55 36.6	.9887100	3 39.4	133 38 45.5	0 53 53.9	.9612572
9	8 45 39.90	18 54 6.4	.9892874	3 35.8	133 40 56.7	0 53 59.3	.9612675
10	8 46 3.70	18 52 35.2	.9898569	3 32.3	133 43 8.0	0 54 4.6	.9612778
11	8 46 27.73	18 51 2.8	.9904186	3 28.8	133 45 19.2	0 54 9.9	.9612881
12	8 46 52.01	18 49 29.4	.9909723	3 25.2	133 47 30.4	0 54 15.2	.9612984
13	8 47 16.52	18 47 54.9	.9915179	3 21.7	133 49 41.6	0 54 20.5	.9613087
14	8 47 41.26	18 46 19.4	.9920555	3 18.2	133 51 52.8	0 54 25.8	.9613190

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
May 4	^h 8 ^m 34 ^s 46 ⁷⁷	+ 0 ^s 50	0 ^s 62	[°] 19 ['] 34 ["] 43 ⁸	- 1 ["] 8	8 ["] 2	0 ["] 9
5	8 34 58 ⁹²	0 ^s 51	0 ^s 62	19 33 59 ⁵	1 ["] 9	8 ["] 2	0 ["] 9
6	8 35 11 ⁴⁶	0 ^s 52	0 ^s 62	19 33 13 ⁹	1 ["] 9	8 ["] 2	0 ["] 9
7	8 35 24 ⁴⁰	0 ^s 54	0 ^s 62	19 32 26 ⁷	2 ["] 0	8 ["] 2	0 ["] 9
8	8 35 37 ⁷²	0 ^s 56	0 ^s 61	19 31 38 ¹	2 ["] 1	8 ["] 1	0 ["] 9
9	8 35 51 ⁴²	0 ^s 58	0 ^s 61	19 30 48 ⁰	2 ["] 2	8 ["] 1	0 ["] 9
10	8 36 5 ⁴⁹	0 ^s 59	0 ^s 61	19 29 56 ⁵	2 ["] 2	8 ["] 1	0 ["] 9
11	8 36 19 ⁹⁵	0 ^s 61	0 ^s 61	19 29 3 ⁵	2 ["] 3	8 ["] 1	0 ["] 9
12	8 36 34 ⁷⁷	0 ^s 62	0 ^s 61	19 28 9 ²	2 ["] 3	8 ["] 1	0 ["] 9
13	8 36 49 ⁹⁶	0 ^s 64	0 ^s 61	19 27 13 ⁵	2 ["] 4	8 ["] 1	0 ["] 9
14	8 37 5 ⁵⁰	0 ^s 65	0 ^s 61	19 26 16 ⁴	2 ["] 4	8 ["] 0	0 ["] 9
15	8 37 21 ⁴⁰	0 ^s 67	0 ^s 61	19 25 17 ⁹	2 ["] 5	8 ["] 0	0 ["] 9
16	8 37 37 ⁶⁶	0 ^s 69	0 ^s 61	19 24 18 ¹	2 ["] 5	8 ["] 0	0 ["] 9
17	8 37 54 ²⁶	0 ^s 70	0 ^s 61	19 23 16 ⁹	2 ["] 6	8 ["] 0	0 ["] 9
18	8 38 11 ²¹	0 ^s 72	0 ^s 61	19 22 14 ⁴	2 ["] 6	8 ["] 0	0 ["] 9
19	8 38 28 ⁴⁹	0 ^s 73	0 ^s 61	19 21 10 ⁵	2 ["] 7	8 ["] 0	0 ["] 9
20	8 38 46 ¹²	0 ^s 75	0 ^s 61	19 20 5 ²	2 ["] 7	8 ["] 0	0 ["] 9
21	8 39 4 ⁰⁸	0 ^s 76	0 ^s 61	19 18 58 ⁶	2 ["] 8	8 ["] 0	0 ["] 9
22	8 39 22 ³⁶	0 ^s 78	0 ^s 60	19 17 50 ⁷	2 ["] 8	7 ["] 9	0 ["] 9
23	8 39 40 ⁹⁸	0 ^s 80	0 ^s 60	19 16 41 ⁵	2 ["] 9	7 ["] 9	0 ["] 9
24	8 39 59 ⁹²	0 ^s 81	0 ^s 60	19 15 31 ⁰	3 ["] 0	7 ["] 9	0 ["] 9
25	8 40 10 ¹⁷	0 ^s 82	0 ^s 60	19 14 19 ²	3 ["] 0	7 ["] 9	0 ["] 9
26	8 40 38 ⁷⁵	0 ^s 83	0 ^s 60	19 13 6 ¹	3 ["] 1	7 ["] 9	0 ["] 9
27	8 40 58 ⁶³	0 ^s 84	0 ^s 60	19 11 51 ⁷	3 ["] 1	7 ["] 9	0 ["] 9
28	8 41 18 ⁸²	0 ^s 85	0 ^s 60	19 10 36 ⁰	3 ["] 2	7 ["] 9	0 ["] 9
29	8 41 39 ³¹	0 ^s 87	0 ^s 59	19 9 19 ¹	3 ["] 2	7 ["] 8	0 ["] 9
30	8 42 0 ¹⁰	0 ^s 88	0 ^s 59	19 8 0 ⁹	3 ["] 3	7 ["] 8	0 ["] 9
31	8 42 21 ¹⁹	0 ^s 89	0 ^s 59	19 6 41 ⁵	3 ["] 3	7 ["] 8	0 ["] 9
June 1	8 42 42 ⁵⁷	0 ^s 90	0 ^s 59	19 5 20 ⁹	3 ["] 4	7 ["] 8	0 ["] 9
2	8 43 4 ²³	0 ^s 91	0 ^s 59	19 3 59 ¹	3 ["] 4	7 ["] 8	0 ["] 9
3	8 43 26 ¹⁸	0 ^s 92	0 ^s 59	19 2 36 ⁰	3 ["] 5	7 ["] 8	0 ["] 9
4	8 43 48 ⁴⁰	0 ^s 93	0 ^s 59	19 1 11 ⁸	3 ["] 5	7 ["] 8	0 ["] 9
5	8 44 10 ⁸⁹	0 ^s 95	0 ^s 59	18 59 46 ³	3 ["] 6	7 ["] 8	0 ["] 9
6	8 44 33 ⁶⁴	0 ^s 96	0 ^s 58	18 58 19 ⁷	3 ["] 6	7 ["] 7	0 ["] 9
7	8 44 56 ⁶⁶	0 ^s 97	0 ^s 58	18 56 51 ⁹	3 ["] 6	7 ["] 7	0 ["] 9
8	8 45 19 ⁹³	0 ^s 98	0 ^s 58	18 55 22 ⁹	3 ["] 7	7 ["] 7	0 ["] 9
9	8 45 43 ⁴⁵	0 ^s 99	0 ^s 58	18 53 52 ⁸	3 ["] 7	7 ["] 7	0 ["] 9
10	8 46 7 ²²	1 ^s 00	0 ^s 58	18 52 21 ⁶	3 ["] 8	7 ["] 7	0 ["] 9
11	8 46 31 ²³	1 ^s 01	0 ^s 58	18 50 49 ³	3 ["] 8	7 ["] 7	0 ["] 9
12	8 46 55 ⁴⁸	1 ^s 02	0 ^s 58	18 49 16 ⁰	3 ["] 9	7 ["] 7	0 ["] 9
13	8 47 19 ⁹⁷	1 ^s 03	0 ^s 58	18 47 41 ⁶	3 ["] 9	7 ["] 7	0 ["] 9
14	8 47 44 ⁶⁸	+ 1 ^s 04	0 ^s 58	18 46 6 ¹	- 4 ["] 0	7 ["] 7	0 ["] 9

MEAN TIME.									
Month and Day.	Geocentric.				Heliocentric.				
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.		
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.		
	<i>h m s</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>		
June 14	8 47 41.26	18 46 19.4	.9920555	3 18.2	133 51 52.8	0 54 25.8	.9613190		
15	8 48 6.22	18 44 42.8	.9925848	3 14.7	133 54 4.0	0 54 31.1	.9615293		
16	8 48 31.41	18 43 5.1	.9931060	3 11.2	133 56 15.1	0 54 36.4	.9613396		
17	8 48 56.82	18 41 26.4	.9936189	3 7.6	133 58 26.3	0 54 41.7	.9613499		
18	8 49 22.44	18 39 46.6	.9941235	3 4.1	134 0 37.5	0 54 47.0	.9613603		
19	8 49 48.27	18 38 5.9	.9946197	3 0.6	134 2 48.6	0 54 52.3	.9613706		
20	8 50 14.31	18 36 24.1	.9951074	2 57.1	134 4 59.8	0 54 57.6	.9613809		
21	8 50 40.55	18 34 41.3	.9955866	2 53.6	134 7 11.0	0 55 2.9	.9613913		
22	8 51 6.99	18 32 57.5	.9960571	2 50.1	134 9 22.1	0 55 8.2	.9614017		
23	8 51 33.62	18 31 12.8	.9965189	2 46.6	134 11 33.3	0 55 13.5	.9614120		
24	8 52 0.44	18 29 27.1	.9969719	2 43.2	134 13 44.4	0 55 18.7	.9614224		
25	8 52 27.45	18 27 40.5	.9974160	2 39.7	134 15 55.5	0 55 24.0	.9614328		
26	8 52 54.64	18 25 53.0	.9978511	2 36.2	134 18 6.6	0 55 29.3	.9614432		
27	8 53 22.00	18 24 4.5	.9982773	2 32.7	134 20 17.8	0 55 34.6	.9614535		
28	8 53 49.54	18 22 15.1	.9986944	2 29.2	134 22 28.9	0 55 39.9	.9614639		
29	8 54 17.24	18 20 24.8	.9991023	2 25.8	134 24 40.0	0 55 45.2	.9614743		
30	8 54 45.11	18 18 33.6	.9995010	2 22.3	134 26 51.1	0 55 50.4	.9614847		
July 1	8 55 13.14	18 16 41.5	.9998905	2 18.8	134 29 2.2	0 55 55.7	.9614952		
			I						
2	8 55 41.32	18 14 48.5	.0002706	2 15.4	134 31 13.3	0 56 1.0	.9615056		
3	8 56 9.65	18 12 54.7	.0006414	2 11.9	134 33 24.4	0 56 6.3	.9615160		
4	8 56 38.12	18 11 0.1	.0010027	2 8.4	134 35 35.4	0 56 11.5	.9615264		
5	8 57 6.73	18 9 4.7	.0013545	2 5.0	134 37 46.5	0 56 16.8	.9615369		
6	8 57 35.48	18 7 8.5	.0016968	2 1.5	134 39 57.6	0 56 22.1	.9615473		
7	8 58 4.35	18 5 11.6	.0020295	1 58.1	134 42 8.6	0 56 27.3	.9615578		
8	8 58 33.36	18 3 13.9	.0023526	1 54.6	134 44 19.7	0 56 32.6	.9615682		
9	8 59 2.48	18 1 15.4	.0026662	1 51.2	134 46 30.7	0 56 37.9	.9615787		
10	8 59 31.72	17 59 16.3	.0029701	1 47.7	134 48 41.7	0 56 43.1	.9615892		
11	9 0 1.07	17 57 16.4	.0032643	1 44.3	134 50 52.8	0 56 48.4	.9615996		
12	9 0 30.53	17 55 15.8	.0035489	1 40.9	134 53 3.8	0 56 53.6	.9616101		
13	9 1 0.09	17 53 14.6	.0038238	1 37.4	134 55 14.8	0 56 58.9	.9616206		
14	9 1 29.75	17 51 12.7	.0040890	1 34.0	134 57 25.8	0 57 4.1	.9616311		
15	9 1 59.51	17 49 10.2	.0043444	1 30.5	134 59 36.8	0 57 9.4	.9616416		
16	9 2 29.36	17 47 7.0	.0045901	1 27.1	135 1 47.8	0 57 14.6	.9616521		
17	9 2 59.29	17 45 3.2	.0048259	1 23.7	135 3 58.8	0 57 19.9	.9616626		
18	9 3 29.31	17 42 58.8	.0050520	1 20.2	135 6 9.7	0 57 25.1	.9616731		
19	9 3 59.41	17 40 53.8	.0052681	1 16.8	135 8 20.7	0 57 30.4	.9616836		
20	9 4 29.59	17 38 48.2	.0054744	1 13.4	135 10 31.7	0 57 35.6	.9616942		
21	9 4 59.84	17 36 42.0	.0056707	1 9.9	135 12 42.6	0 57 40.9	.9617047		
22	9 5 30.16	17 34 35.3	.0058571	1 6.5	135 14 53.6	0 57 46.1	.9617152		
23	9 6 0.54	17 32 28.1	.0060334	1 3.1	135 17 4.5	0 57 51.4	.9617258		
24	9 6 30.99	17 30 20.3	.0061997	0 59.7	135 19 15.4	0 57 56.6	.9617363		
25	9 7 1.49	17 28 12.1	.0063558	0 56.2	135 21 26.4	0 58 1.8	.9617469		

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	<i>North.</i>						
June 14	^h 8 ^m 47 ^s 44.68	+ ^s 1.04	^s 0.58	18° 46' 6".1	— 4".0	7".7	0".9
15	8 48 9.62	1.05	0.58	18 44 29.6	4".0	7".7	0".9
16	8 48 34.77	1.06	0.58	18 42 52.1	4".1	7".6	0".9
17	8 49 0.15	1.07	0.58	18 41 13.5	4".1	7".6	0".9
18	8 49 25.73	1.07	0.58	18 39 33.8	4".1	7".6	0".9
19	8 49 51.53	1.08	0.58	18 37 53.2	4".2	7".6	0".9
20	8 50 17.53	1.09	0.58	18 36 11.5	4".2	7".6	0".9
21	8 50 43.73	1.10	0.58	18 34 28.9	4".2	7".6	0".9
22	8 51 10.13	1.11	0.58	18 32 45.2	4".3	7".6	0".9
23	8 51 36.71	1.12	0.58	18 31 0.6	4".3	7".6	0".9
24	8 52 3.49	1.13	0.58	18 29 15.1	4".4	7".6	0".9
25	8 52 30.46	1.13	0.58	18 27 28.7	4".4	7".6	0".9
26	8 52 57.60	1.14	0.58	18 25 41.3	4".5	7".6	0".9
27	8 53 24.91	1.14	0.57	18 23 52.9	4".5	7".5	0".9
28	8 53 52.40	1.15	0.57	18 22 3.7	4".5	7".5	0".9
29	8 54 20.06	1.15	0.57	18 20 13.6	4".6	7".5	0".9
30	8 54 47.87	1.16	0.57	18 18 22.5	4".6	7".5	0".9
July 1	8 55 15.85	1.17	0.57	18 16 30.6	4".6	7".5	0".9
2	8 55 43.97	1.17	0.57	18 14 37.9	4".7	7".5	0".9
3	8 56 12.25	1.18	0.57	18 12 44.3	4".7	7".5	0".9
4	8 56 40.67	1.19	0.57	18 10 49.9	4".7	7".5	0".9
5	8 57 9.22	1.19	0.57	18 8 54.6	4".8	7".5	0".9
6	8 57 37.91	1.20	0.57	18 6 58.7	4".8	7".5	0".9
7	8 58 6.73	1.20	0.57	18 5 1.9	4".8	7".5	0".9
8	8 58 35.67	1.21	0.57	18 3 4.5	4".9	7".5	0".9
9	8 59 4.73	1.21	0.57	18 1 6.2	4".9	7".5	0".9
10	8 59 33.91	1.22	0.57	17 59 7.3	5".0	7".5	0".9
11	9 0 3.20	1.23	0.56	17 57 7.7	5".0	7".4	0".9
12	9 0 32.60	1.23	0.56	17 55 7.4	5".0	7".4	0".9
13	9 1 2.09	1.23	0.56	17 53 6.4	5".0	7".4	0".9
14	9 1 31.69	1.24	0.56	17 51 4.7	5".0	7".4	0".9
15	9 2 1.38	1.24	0.56	17 49 2.5	5".0	7".4	0".8
16	9 2 31.17	1.24	0.56	17 46 59.5	5".0	7".4	0".8
17	9 3 1.03	1.25	0.56	17 44 56.0	5".1	7".4	0".8
18	9 3 30.99	1.25	0.56	17 42 51.8	5".1	7".4	0".8
19	9 4 1.02	1.25	0.56	17 40 47.1	5".1	7".4	0".8
20	9 4 31.13	1.26	0.56	17 38 41.8	5".2	7".4	0".8
21	9 5 1.31	1.26	0.56	17 36 35.9	5".2	7".4	0".8
22	9 5 31.56	1.26	0.56	17 34 29.5	5".2	7".4	0".8
23	9 6 1.87	1.26	0.56	17 32 22.5	5".2	7".4	0".8
24	9 6 32.25	1.27	0.56	17 30 15.0	5".3	7".4	0".8
25	9 7 2.68	+ 1.27	0.56	17 28 7.1	— 5".3	7".4	0".8

MEAN TIME.									
Month and Day.	Geocentric.					Heliocentric.			
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.		Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	
<div> <div> <div>h</div> <div>m</div> <div>s</div> </div> <div> <div>°</div> <div>'</div> <div>"</div> </div> <div>I</div> <div> <div>h</div> <div>m</div> </div> <div> <div>°</div> <div>'</div> <div>"</div> </div> <div> <div>North.</div> <div>°</div> </div> </div>									
July 25	9 7 1.49	17 28 12.1	.0063558	0 56.2	135 21 26.4	0 58 1.8	.9617469		
26	9 7 32.05	17 26 3.3	.0065018	0 52.8	135 23 37.3	0 58 7.1	.9617575		
27	9 8 2.65	17 23 54.1	.0066377	0 49.4	135 25 48.2	0 58 12.3	.9617680		
28	9 8 33.30	17 21 44.5	.0067634	0 46.0	135 27 59.1	0 58 17.5	.9617786		
29	9 9 3.98	17 19 34.4	.0068789	0 42.5	135 30 10.0	0 58 22.8	.9617892		
30	9 9 34.70	17 17 23.9	.0069841	0 39.1	135 32 20.9	0 58 28.0	.9617998		
Aug. 31	9 10 5.45	17 15 13.1	.0070792	0 35.7	135 34 31.7	0 58 33.2	.9618104		
1	9 10 36.22	17 13 1.8	.0071639	0 32.3	135 36 42.6	0 58 38.4	.9618210		
2	9 11 7.01	17 10 50.3	.0072384	0 28.8	135 38 53.5	0 58 43.7	.9618316		
3	9 11 37.81	17 8 38.4	.0073026	0 25.4	135 41 4.3	0 58 48.9	.9618422		
4	9 12 8.63	17 6 26.2	.0073566	0 22.0	135 43 15.2	0 58 54.1	.9618528		
5	9 12 39.45	17 4 13.7	.0074003	0 18.6	135 45 26.0	0 58 59.3	.9618634		
6	9 13 10.28	17 2 1.0	.0074337	0 15.2	135 47 36.9	0 59 4.5	.9618741		
7	9 13 41.10	16 59 48.1	.0074569	0 11.7	135 49 47.7	0 59 9.8	.9618847		
8	9 14 11.92	16 57 34.9	.0074698	0 8.3	135 51 58.5	0 59 15.0	.9618954		
9	9 14 42.73	16 55 21.5	.0074725	0 4.9	135 54 9.3	0 59 20.2	.9619060		
10	9 15 13.52	16 53 7.9	.0074649	{ 0 1.5 }	135 56 20.1	0 59 25.4	.9619167		
11	9 15 44.30	16 50 54.2	.0074471	23 54.6	135 58 30.9	0 59 30.6	.9619274		
12	9 16 15.05	16 48 40.3	.0074192	23 51.2	136 0 41.7	0 59 35.8	.9619380		
13	9 16 45.78	16 46 26.2	.0073809	23 47.8	136 2 52.4	0 59 41.0	.9619487		
14	9 17 16.49	16 44 12.1	.0073325	23 44.4	136 5 3.2	0 59 46.2	.9619594		
15	9 17 47.16	16 41 57.9	.0072739	23 40.9	136 7 14.0	0 59 51.4	.9619700		
16	9 18 17.79	16 39 43.6	.0072050	23 37.5	136 9 24.7	0 59 56.6	.9619807		
17	9 18 48.38	16 37 29.3	.0071259	23 34.1	136 11 35.5	1 0 1.8	.9619914		
18	9 19 18.93	16 35 14.9	.0070366	23 30.7	136 13 46.2	1 0 7.0	.9620021		
19	9 19 49.44	16 33 0.5	.0069371	23 27.2	136 15 56.9	0 12.2	.9620128		
20	9 20 19.89	16 30 46.1	.0068273	23 23.8	136 18 7.7	0 17.4	.9620235		
21	9 20 50.28	16 28 31.7	.0067073	23 20.4	136 20 18.4	0 22.6	.9620343		
22	9 21 20.61	16 26 17.4	.0065771	23 17.0	136 22 29.1	0 27.8	.9620450		
23	9 21 50.88	16 24 3.1	.0064367	23 13.5	136 24 39.8	0 33.0	.9620557		
24	9 22 21.08	16 21 49.0	.0062860	23 10.1	136 26 50.5	0 38.2	.9620665		
25	9 22 51.21	16 19 34.9	.0061250	23 6.6	136 29 1.2	0 43.4	.9620772		
26	9 23 21.26	16 17 21.0	.0059539	23 3.2	136 31 11.8	0 48.6	.9620880		
27	9 23 51.23	16 15 7.3	.0057725	22 59.8	136 33 22.5	0 53.8	.9620987		
28	9 24 21.11	16 12 53.7	.0055809	22 56.3	136 35 33.2	0 58.9	.9621095		
29	9 24 50.90	16 10 40.4	.0053790	22 52.9	136 37 43.8	1 4.1	.9621203		
30	9 25 20.59	16 8 27.3	.0051670	22 49.5	136 39 54.5	1 9.3	.9621310		
31	9 25 50.18	16 6 14.5	.0049449	22 46.0	136 42 5.1	1 14.5	.9621418		
Sept. 1	9 26 19.66	16 4 1.9	.0047126	22 42.6	136 44 15.8	1 19.7	.9621526		
2	9 26 49.04	16 1 49.7	.0044703	22 39.1	136 46 26.4	1 24.8	.9621634		
3	9 27 18.30	15 59 37.9	.0042180	22 35.7	136 48 37.0	1 30.0	.9621742		
4	9 27 47.44	15 57 26.4	.0039557	22 32.2	136 50 47.6	1 35.2	.9621850		

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
<i>North.</i>							
July 25	^h 9 ^m 7 ^s 2.68	^s + 1.27	^s 0.56	[°] 17 28 ['] 7.1	["] - 5.3	["] 7.4	["] 0.8
26	9 7 33.17	1.27	0.56	17 25 58.6	5.3	7.4	0.8
27	9 8 3.70	1.28	0.56	17 23 49.7	5.3	7.4	0.8
28	9 8 34.28	1.28	0.56	17 21 40.3	5.4	7.4	0.8
29	9 9 4.89	1.28	0.56	17 19 30.6	5.4	7.4	0.8
30	9 9 35.53	1.28	0.56	17 17 20.4	5.4	7.4	0.8
31	9 10 6.21	1.28	0.56	17 15 9.8	5.4	7.4	0.8
Aug. 1	9 10 36.91	1.28	0.56	17 12 58.9	5.4	7.4	0.8
2	9 11 7.62	1.28	0.56	17 10 47.6	5.4	7.4	0.8
3	9 11 38.36	1.28	0.56	17 8 36.0	5.5	7.4	0.8
4	9 12 9.10	1.28	0.56	17 6 24.2	5.5	7.4	0.8
5	9 12 39.85	1.28	0.56	17 4 12.0	5.5	7.4	0.8
6	9 13 10.60	1.28	0.56	17 1 59.6	5.5	7.4	0.8
7	9 13 41.35	1.28	0.56	16 59 47.0	5.5	7.4	0.8
8	{ 9 14 2.40 }	{ 1.28 }	{ 0.56 }	{ 16 57 34.1 }	{ 5.5 }	{ 7.4 }	{ 0.8 }
9	9 15 13.55	1.28	0.56	16 53 7.8	5.5	7.4	0.8
10	9 15 44.26	1.28	0.56	16 50 54.3	5.5	7.4	0.8
11	9 16 14.94	1.28	0.56	16 48 40.8	5.5	7.4	0.8
12	9 16 45.60	1.27	0.56	16 46 27.1	5.5	7.4	0.8
13	9 17 16.23	1.27	0.56	16 44 13.3	5.6	7.4	0.8
14	9 17 46.82	1.27	0.56	16 41 59.4	5.6	7.4	0.8
15	9 18 17.38	1.27	0.56	16 39 45.4	5.6	7.4	0.8
16	9 18 47.91	1.26	0.56	16 37 31.4	5.6	7.4	0.8
17	9 19 18.39	1.26	0.56	16 35 17.3	5.6	7.4	0.8
18	9 19 48.82	1.26	0.56	16 33 3.2	5.6	7.4	0.8
19	9 20 19.20	1.26	0.56	16 30 49.1	5.6	7.4	0.8
20	9 20 49.52	1.25	0.56	16 28 35.1	5.6	7.4	0.8
21	9 21 19.78	1.25	0.56	16 26 21.1	5.6	7.4	0.8
22	9 21 49.98	1.25	0.56	16 24 7.2	5.5	7.4	0.8
23	9 22 20.11	1.24	0.56	16 21 53.3	5.5	7.4	0.8
24	9 22 50.17	1.24	0.56	16 19 39.6	5.5	7.4	0.8
25	9 23 20.15	1.24	0.56	16 17 26.0	5.5	7.4	0.8
26	9 23 50.05	1.23	0.56	16 15 12.5	5.5	7.4	0.8
27	9 24 19.86	1.23	0.56	16 12 59.3	5.5	7.4	0.8
28	9 24 49.58	1.23	0.56	16 10 46.2	5.5	7.4	0.8
29	9 25 19.21	1.23	0.56	16 8 33.5	5.5	7.4	0.8
30	9 25 48.73	1.22	0.56	16 6 21.0	5.4	7.4	0.8
31	9 26 18.15	1.22	0.56	16 4 8.7	5.4	7.4	0.8
Sept. 1	9 26 47.46	1.22	0.56	16 1 56.8	5.4	7.4	0.8
2	9 27 16.66	1.21	0.56	15 59 45.3	5.4	7.4	0.8
3	9 27 45.74	1.21	0.56	15 57 34.1	5.4	7.4	0.9
4	9 28 14.70	+ 1.21	0.56	15 55 23.4	- 5.4	7.4	0.9

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>I</i>	<i>h m</i>	<i>° ' "</i>	<i>North. ° ' "</i>	<i>o</i>
Sept. 4	9 27 47.44	15 57 26.4	.0039557	22 32.2	136 50 47.6	1 1 35.2	.9621850
5	9 28 16.47	15 55 15.4	.0036836	22 28.8	136 52 58.2	1 1 40.3	.9621958
6	9 28 45.36	15 53 4.7	.0034015	22 25.3	136 55 8.8	1 1 45.5	.9622066
7	9 29 14.13	15 50 54.5	.0031096	22 21.9	136 57 19.4	1 1 50.7	.9622174
8	9 29 42.76	15 48 44.8	.0028078	22 18.4	136 59 30.0	1 1 55.8	.9622282
9	9 30 11.25	15 46 35.5	.0024963	22 14.9	137 1 40.6	1 2 1.0	.9622391
10	9 30 39.60	15 44 26.7	.0021751	22 11.5	137 3 51.2	1 2 6.1	.9622499
11	9 31 7.81	15 42 18.5	.0018441	22 8.0	137 6 1.7	1 2 11.3	.9622607
12	9 31 35.87	15 40 10.8	.0015035	22 4.6	137 8 12.3	1 2 16.4	.9622716
13	9 32 3.77	15 38 3.7	.0011533	22 1.1	137 10 22.8	1 2 21.6	.9622824
14	9 32 31.52	15 35 57.2	.0007935	21 57.6	137 12 33.4	1 2 26.7	.9622932
15	9 32 59.10	15 33 51.3	.0004242	21 54.1	137 14 43.9	1 2 31.9	.9623041
16	9 33 26.52	15 31 46.0	.0000454	21 50.6	137 16 54.4	1 2 37.0	.9623150
			<i>o</i>				
17	9 33 53.77	15 29 41.4	.9996572	21 47.2	137 19 5.0	1 2 42.2	.9623258
18	9 34 20.85	15 27 37.5	.9992595	21 43.7	137 21 15.5	1 2 47.3	.9623367
19	9 34 47.75	15 25 34.3	.9988525	21 40.2	137 23 26.0	1 2 52.4	.9623476
20	9 35 14.47	15 23 31.9	.9984360	21 36.7	137 25 36.5	1 2 57.6	.9623585
21	9 35 41.00	15 21 30.2	.9980103	21 33.2	137 27 47.0	1 3 2.7	.9623694
22	9 36 7.34	15 19 29.3	.9975752	21 29.7	137 29 57.5	1 3 7.9	.9623803
23	9 36 33.49	15 17 29.3	.9971310	21 26.2	137 32 8.0	1 3 13.0	.9623912
24	9 36 59.44	15 15 30.2	.9966775	21 22.7	137 34 18.5	1 3 18.1	.9624021
25	9 37 25.18	15 13 31.9	.9962150	21 19.2	137 36 29.0	1 3 23.2	.9624130
26	9 37 50.71	15 11 34.6	.9957434	21 15.7	137 38 39.4	1 3 28.4	.9624239
27	9 38 16.03	15 9 38.2	.9952628	21 12.2	137 40 49.9	1 3 33.5	.9624349
28	9 38 41.12	15 7 42.8	.9947733	21 8.6	137 43 0.3	1 3 38.6	.9624458
29	9 39 5.99	15 5 48.4	.9942750	21 5.1	137 45 10.8	1 3 43.7	.9624567
30	9 39 30.64	15 3 55.1	.9937681	21 1.6	137 47 21.2	1 3 48.9	.9624677
Oct. 1	9 39 55.05	15 2 2.8	.9932525	20 58.1	137 49 31.7	1 3 54.0	.9624786
2	9 40 19.22	15 0 11.6	.9927284	20 54.5	137 51 42.1	1 3 59.1	.9624896
3	9 40 43.15	14 58 21.5	.9921959	20 51.0	137 53 52.5	1 4 4.2	.9625005
4	9 41 6.84	14 56 32.6	.9916551	20 47.4	137 56 2.9	1 4 9.3	.9625115
5	9 41 30.28	14 54 44.8	.9911061	20 43.9	137 58 13.3	1 4 14.4	.9625225
6	9 41 53.46	14 52 58.3	.9905490	20 40.4	138 0 23.7	1 4 19.5	.9625334
7	9 42 16.39	14 51 12.9	.9899839	20 36.8	138 2 34.1	1 4 24.6	.9625444
8	9 42 39.06	14 49 28.8	.9894108	20 33.2	138 4 44.5	1 4 29.7	.9625554
9	9 43 1.47	14 47 46.0	.9888299	20 29.7	138 6 54.9	1 4 34.9	.9625664
10	9 43 23.61	14 46 4.4	.9882413	20 26.1	138 9 5.3	1 4 40.0	.9625774
11	9 43 45.47	14 44 24.2	.9876450	20 22.5	138 11 15.6	1 4 45.1	.9625885
12	9 44 7.06	14 42 45.3	.9870412	20 19.0	138 13 26.0	1 4 50.1	.9625995
13	9 44 28.37	14 41 7.8	.9864298	20 15.4	138 15 36.4	1 4 55.2	.9626105
14	9 44 49.39	14 39 31.6	.9858111	20 11.8	138 17 46.7	1 5 0.3	.9626215
15	9 45 10.13	14 37 56.9	.9851851	20 8.2	138 19 57.1	1 5 5.4	.9626326

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Std. Time of Sen. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	["]	["]
Sept. 4	9 28 14.70	+ 1' 21	0.56	15 55 23.4	- 5' 4	7' 4	0.9
5	9 28 43.54	1' 20	0.56	15 53 13.0	5' 4	7' 4	0.9
6	9 29 12.24	1' 19	0.56	15 51 3.1	5' 3	7' 5	0.9
7	9 29 40.82	1' 18	0.56	15 48 53.6	5' 3	7' 5	0.9
8	9 30 9.25	1' 17	0.56	15 46 44.6	5' 3	7' 5	0.9
9	9 30 37.54	1' 16	0.56	15 44 36.1	5' 3	7' 5	0.9
10	9 31 5.69	1' 16	0.56	15 42 28.2	5' 3	7' 5	0.9
11	9 31 33.69	1' 15	0.56	15 40 20.8	5' 2	7' 5	0.9
12	9 32 1.54	1' 15	0.56	15 38 13.9	5' 2	7' 5	0.9
13	9 32 29.23	1' 14	0.56	15 36 7.6	5' 2	7' 5	0.9
14	9 32 56.76	1' 14	0.56	15 34 2.0	5' 2	7' 5	0.9
15	9 33 24.13	1' 13	0.56	15 31 56.9	5' 2	7' 5	0.9
16	9 33 51.33	1' 13	0.56	15 29 52.6	5' 2	7' 5	0.9
17	9 34 18.36	1' 12	0.56	15 27 48.9	5' 1	7' 5	0.9
18	9 34 45.21	1' 12	0.56	15 25 45.9	5' 1	7' 5	0.9
19	9 35 11.88	1' 11	0.56	15 23 43.7	5' 1	7' 5	0.9
20	9 35 38.37	1' 11	0.56	15 21 42.3	5' 0	7' 5	0.9
21	9 36 4.67	1' 10	0.56	15 19 41.6	5' 0	7' 5	0.9
22	9 36 30.77	1' 09	0.57	15 17 41.8	5' 0	7' 6	0.9
23	9 36 56.68	1' 08	0.57	15 15 42.9	4' 9	7' 6	0.9
24	9 37 22.38	1' 07	0.57	15 13 44.8	4' 9	7' 6	0.9
25	9 37 47.87	1' 06	0.57	15 11 47.6	4' 8	7' 6	0.9
26	9 38 13.15	1' 05	0.57	15 9 51.4	4' 8	7' 6	0.9
27	9 38 38.21	1' 04	0.57	15 7 56.2	4' 7	7' 6	0.9
28	9 39 3.05	1' 03	0.57	15 6 2.0	4' 7	7' 6	0.9
29	9 39 27.66	1' 02	0.57	15 4 8.8	4' 7	7' 6	0.9
30	9 39 52.03	1' 01	0.57	15 2 16.6	4' 6	7' 6	0.9
Oct. 1	9 40 16.18	1' 00	0.57	15 0 25.6	4' 6	7' 6	0.9
2	9 40 40.08	0' 99	0.58	14 58 35.6	4' 5	7' 7	0.9
3	9 41 3.74	0' 98	0.58	14 56 46.8	4' 5	7' 7	0.9
4	9 41 27.16	0' 97	0.58	14 54 59.2	4' 4	7' 7	0.9
5	9 41 50.32	0' 96	0.58	14 53 12.7	4' 4	7' 7	0.9
6	9 42 13.23	0' 95	0.58	14 51 27.5	4' 3	7' 7	0.9
7	9 42 35.88	0' 94	0.58	14 49 43.5	4' 3	7' 7	0.9
8	9 42 58.27	0' 93	0.58	14 48 0.7	4' 2	7' 7	0.9
9	9 43 20.39	0' 92	0.58	14 46 19.2	4' 2	7' 7	0.9
10	9 43 42.24	0' 91	0.58	14 44 39.0	4' 1	7' 7	0.9
11	9 44 3.82	0' 90	0.59	14 43 0.2	4' 1	7' 8	0.9
12	9 44 25.11	0' 88	0.59	14 41 22.7	4' 0	7' 8	0.9
13	9 44 46.13	0' 86	0.59	14 39 46.5	3' 9	7' 8	0.9
14	9 45 6.86	0' 85	0.59	14 38 11.8	3' 9	7' 8	0.9
15	9 45 27.31	+ 0' 84	0.59	14 36 38.5	- 3' 8	7' 8	0.9

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>	<i>h m s</i>	<i>° ' "</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>
Oct. 15	9 45 10.13	14 37 56.9	9851851	20 8.2	138 19 57.1	5 5.4	9626326
16	9 45 30.58	14 36 23.6	9845519	20 4.6	138 22 7.4	5 10.5	9626436
17	9 45 50.73	14 34 51.8	9839116	20 1.0	138 24 17.7	5 15.6	9626547
18	9 46 10.58	14 33 21.5	9832643	19 57.4	138 26 28.1	5 20.7	9626657
19	9 46 30.13	14 31 52.7	9826101	19 53.8	138 28 38.4	5 25.8	9626768
20	9 46 49.37	14 30 25.5	9819492	19 50.1	138 30 48.7	5 30.9	9626878
21	9 47 8.29	14 28 59.8	9812817	19 46.5	138 32 59.0	5 36.0	9626989
22	9 47 26.90	14 27 35.7	9806077	19 42.9	138 35 9.4	5 41.0	9627100
23	9 47 45.18	14 26 13.3	9799273	19 39.3	138 37 19.7	5 46.1	9627211
24	9 48 3.13	14 24 52.5	9792408	19 35.6	138 39 30.0	5 51.2	9627322
25	9 48 20.76	14 23 33.4	9785481	19 32.0	138 41 40.3	5 56.3	9627433
26	9 48 38.04	14 22 16.0	9778496	19 28.3	138 43 50.5	6 1.3	9627544
27	9 48 54.99	14 21 0.4	9771453	19 24.7	138 46 0.8	6 6.4	9627655
28	9 49 11.59	14 19 46.6	9764354	19 21.0	138 48 11.1	6 11.5	9627766
29	9 49 27.85	14 18 34.6	9757200	19 17.3	138 50 21.4	6 16.5	9627877
30	9 49 43.75	14 17 24.5	9749994	19 13.7	138 52 31.6	6 21.6	9627988
31	9 49 59.30	14 16 16.1	9742738	19 10.0	138 54 41.9	6 26.7	9628100
Nov. 1	9 50 14.49	14 15 9.7	9735432	19 6.3	138 56 52.2	6 31.7	9628211
2	9 50 29.33	14 14 5.1	9728080	19 2.6	138 59 2.4	6 36.8	9628323
3	9 50 43.80	14 13 2.4	9720683	18 58.9	139 1 12.7	6 41.9	9628435
4	9 50 57.91	14 12 1.6	9713243	18 55.2	139 3 22.9	6 46.9	9628546
5	9 51 11.64	14 11 2.7	9705761	18 51.5	139 5 33.2	6 52.0	9628658
6	9 51 25.00	14 10 5.8	9698239	18 47.8	139 7 43.4	6 57.0	9628770
7	9 51 37.98	14 9 10.9	9690679	18 44.1	139 9 53.6	7 2.1	9628881
8	9 51 50.58	14 8 17.9	9683082	18 40.4	139 12 3.9	7 7.1	9628993
9	9 52 2.80	14 7 27.0	9675450	18 36.6	139 14 14.1	7 12.2	9629105
10	9 52 14.63	14 6 38.1	9667785	18 32.9	139 16 24.3	7 17.2	9629217
11	9 52 26.08	14 5 51.2	9660088	18 29.1	139 18 34.5	7 22.3	9629329
12	9 52 37.13	14 5 6.5	9652362	18 25.4	139 20 44.7	7 27.3	9629441
13	9 52 47.79	14 4 23.8	9644609	18 21.6	139 22 54.9	7 32.4	9629553
14	9 52 58.05	14 3 43.2	9636829	18 17.8	139 25 5.1	7 37.4	9629666
15	9 53 7.91	14 3 4.7	9629026	18 14.1	139 27 15.3	7 42.4	9629778
16	9 53 17.37	14 2 28.4	9621201	18 10.3	139 29 25.5	7 47.5	9629890
17	9 53 26.42	14 1 54.3	9613356	18 6.5	139 31 35.7	7 52.5	9630003
18	9 53 35.07	14 1 22.3	9605494	18 2.7	139 33 45.9	7 57.5	9630115
19	9 53 43.30	14 0 52.5	9597617	17 58.9	139 35 56.1	8 2.6	9630228
20	9 53 51.11	14 0 24.9	9589727	17 55.1	139 38 6.2	8 7.6	9630340
21	9 53 58.51	13 59 59.5	9581826	17 51.3	139 40 16.4	8 12.6	9630453
22	9 54 5.49	13 59 36.4	9573918	17 47.5	139 42 26.5	8 17.6	9630565
23	9 54 12.04	13 59 15.5	9566004	17 43.7	139 44 36.7	8 22.7	9630678
24	9 54 18.17	13 58 56.8	9558086	17 39.8	139 46 46.8	8 27.7	9630791
25	9 54 23.87	13 58 40.5	9550168	17 36.0	139 48 57.0	8 32.7	9630904

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
				North.			
	^h ^m ^s	[°] ['] ["]	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	["]	["]
Oct. 15	9 45 27.31	+ 0.84	0.59	14 36 38.5	- 3.8	7.8	0.9
16	9 45 47.46	0.83	0.59	14 35 6.7	3.8	7.8	0.9
17	9 46 7.31	0.82	0.59	14 33 36.4	3.7	7.8	0.9
18	9 46 26.86	0.81	0.59	14 32 7.6	3.7	7.8	0.9
19	9 46 46.10	0.80	0.59	14 30 40.3	3.6	7.9	0.9
20	9 47 5.03	0.78	0.59	14 29 14.6	3.6	7.9	0.9
21	9 47 23.64	0.77	0.59	14 27 50.4	3.5	7.9	0.9
22	9 47 41.94	0.75	0.59	14 26 27.8	3.5	7.9	0.9
23	9 47 59.91	0.74	0.59	14 25 7.0	3.4	7.9	0.9
24	9 48 17.55	0.72	0.59	14 23 47.8	3.4	7.9	0.9
25	9 48 34.85	0.71	0.59	14 22 30.3	3.3	7.9	0.9
26	9 48 51.82	0.69	0.59	14 21 14.5	3.2	7.9	0.9
27	9 49 8.44	0.68	0.60	14 20 0.6	3.1	8.0	0.9
28	9 49 24.73	0.66	0.60	14 18 48.4	3.0	8.0	0.9
29	9 49 40.66	0.65	0.60	14 17 38.1	3.0	8.0	0.9
30	9 49 56.24	0.64	0.60	14 16 29.6	2.9	8.0	0.9
31	9 50 11.46	0.62	0.60	14 15 22.9	2.8	8.0	0.9
Nov. 1	9 50 26.33	0.61	0.60	14 14 18.1	2.7	8.0	0.9
2	9 50 40.84	0.59	0.60	14 13 15.2	2.6	8.0	0.9
3	9 50 54.99	0.58	0.60	14 12 14.1	2.5	8.1	0.9
4	9 51 8.76	0.56	0.60	14 11 15.0	2.5	8.1	0.9
5	9 51 22.17	0.55	0.60	14 10 17.8	2.4	8.1	0.9
6	9 51 35.20	0.53	0.60	14 9 22.6	2.3	8.1	0.9
7	9 51 47.85	0.52	0.60	14 8 29.3	2.2	8.1	0.9
8	9 52 0.12	0.51	0.60	14 7 38.1	2.1	8.1	0.9
9	9 52 12.01	0.49	0.60	14 6 48.9	2.0	8.1	0.9
10	9 52 23.51	0.47	0.61	14 6 1.7	1.9	8.2	0.9
11	9 52 34.63	0.45	0.61	14 5 16.6	1.8	8.2	0.9
12	9 52 45.35	0.44	0.61	14 4 33.5	1.7	8.2	0.9
13	9 52 55.67	0.42	0.61	14 3 52.6	1.7	8.2	0.9
14	9 53 5.60	0.40	0.61	14 3 13.7	1.6	8.2	0.9
15	9 53 15.13	0.39	0.61	14 2 37.0	1.5	8.2	0.9
16	9 53 24.26	0.37	0.61	14 2 2.4	1.4	8.3	0.9
17	9 53 32.98	0.36	0.61	14 1 29.9	1.3	8.3	0.9
18	9 53 41.29	0.34	0.61	14 0 59.7	1.2	8.3	0.9
19	9 53 49.19	0.33	0.61	14 0 31.6	1.1	8.3	0.9
20	9 53 56.67	0.31	0.61	14 0 5.7	1.0	8.3	0.9
21	9 54 3.74	0.29	0.61	13 59 42.1	0.9	8.3	0.9
22	9 54 10.38	0.27	0.62	13 59 20.7	0.9	8.3	0.9
23	9 54 16.61	0.25	0.62	13 59 1.5	0.8	8.3	0.9
24	9 54 22.41	0.23	0.62	13 58 44.6	0.7	8.3	1.0
25	9 54 27.79	+ 0.22	0.62	13 58 29.9	- 0.6	8.3	1.0

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>	<i>h m</i>	<i>° ' "</i>	<i>North.</i> <i>° ' "</i>	<i>°</i>
Nov. 25	9 54 23.87	13 58 40.5	.9550168	17 36.0	139 48 57.0	1 8 32.7	.9630904
26	9 54 29.15	13 58 26.4	.9542252	17 32.1	139 51 7.1	1 8 37.7	.9631017
27	9 54 33.99	13 58 14.6	.9534340	17 28.3	139 53 17.2	1 8 42.7	.9631130
28	9 54 38.41	13 58 5.2	.9526436	17 24.4	139 55 27.4	1 8 47.8	.9631243
29	9 54 42.39	13 57 58.0	.9518542	17 20.5	139 57 37.5	1 8 52.8	.9631356
30	9 54 45.93	13 57 53.1	.9510660	17 16.6	139 59 47.6	1 8 57.8	.9631469
Dec. 1	9 54 49.05	13 57 50.5	.9502793	17 12.8	140 1 57.7	1 9 2.8	.9631582
2	9 54 51.73	13 57 50.2	.9494944	17 8.9	140 4 7.8	1 9 7.8	.9631695
3	9 54 53.98	13 57 52.2	.9487116	17 5.0	140 6 17.9	1 9 12.8	.9631808
4	9 54 55.79	13 57 56.4	.9479311	17 1.1	140 8 28.0	1 9 17.8	.9631922
5	9 54 57.41	13 58 2.9	.9471532	16 57.1	140 10 38.1	1 9 22.8	.9632035
6	9 54 58.12	13 58 11.8	.9463780	16 53.2	140 12 48.2	1 9 27.8	.9632148
7	9 54 58.64	13 58 22.9	.9456060	16 49.3	140 14 58.2	1 9 32.8	.9632262
8	9 54 58.72	13 58 36.3	.9448372	16 45.4	140 17 8.3	1 9 37.8	.9632375
9	9 54 58.37	13 58 52.0	.9440720	16 41.4	140 19 18.4	1 9 42.8	.9632489
10	9 54 57.59	13 59 10.0	.9433106	16 37.5	140 21 28.4	1 9 47.8	.9632603
11	9 54 56.37	13 59 30.3	.9425534	16 33.5	140 23 38.5	1 9 52.8	.9632716
12	9 54 54.72	13 59 52.9	.9418005	16 29.6	140 25 48.5	1 9 57.8	.9632830
13	9 54 52.64	14 0 17.7	.9410522	16 25.6	140 27 58.6	1 10 2.7	.9632944
14	9 54 50.12	14 0 44.7	.9403089	16 21.6	140 30 8.6	1 10 7.7	.9633058
15	9 54 47.18	14 1 13.9	.9395707	16 17.6	140 32 18.6	1 10 12.7	.9633172
16	9 54 43.80	14 1 45.4	.9388380	16 13.6	140 34 28.6	1 10 17.7	.9633286
17	9 54 40.00	14 2 19.1	.9381110	16 9.6	140 36 38.6	1 10 22.7	.9633400
18	9 54 35.77	14 2 55.0	.9373901	16 5.6	140 38 48.6	1 10 27.6	.9633514
19	9 54 31.11	14 3 33.1	.9366756	16 1.6	140 40 58.6	1 10 32.6	.9633628
20	9 54 26.03	14 4 13.3	.9359677	15 57.6	140 43 8.6	1 10 37.6	.9633742
21	9 54 20.53	14 4 55.7	.9352667	15 53.5	140 45 18.6	1 10 42.6	.9633856
22	9 54 14.61	14 5 40.3	.9345730	15 49.5	140 47 28.6	1 10 47.5	.9633970
23	9 54 8.27	14 6 27.0	.9338868	15 45.5	140 49 38.6	1 10 52.5	.9634085
24	9 54 1.52	14 7 15.8	.9332085	15 41.4	140 51 48.5	1 10 57.5	.9634199
25	9 53 54.36	14 8 6.7	.9325383	15 37.4	140 53 58.5	1 11 2.4	.9634314
26	9 53 46.80	14 8 59.6	.9318765	15 33.3	140 56 8.4	1 11 7.4	.9634428
27	9 53 38.84	14 9 54.5	.9312235	15 29.2	140 58 18.4	1 11 12.3	.9634543
28	9 53 30.47	14 10 51.5	.9305794	15 25.2	141 0 28.3	1 11 17.3	.9634657
29	9 53 21.72	14 11 50.3	.9299447	15 21.1	141 2 38.2	1 11 22.3	.9634772
30	9 53 12.58	14 12 51.1	.9293195	15 17.0	141 4 48.2	1 11 27.3	.9634887
31	9 53 3.05	14 13 53.8	.9287042	15 12.9	141 6 58.1	1 11 32.2	.9635001
32	9 52 53.15	14 14 58.4	.9280990	15 8.8	141 9 8.0	1 11 37.1	.9635116

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
Nov. 25	h m s 9 54 27.79	+ 0.22	0.62	13 58 29.9	- 0.6	8.3	1.0
26	9 54 32.73	0.20	0.62	13 58 17.6	0.5	8.3	1.0
27	9 54 37.25	0.18	0.62	13 58 7.5	0.4	8.3	1.0
28	9 54 41.34	0.16	0.63	13 57 59.7	0.3	8.4	1.0
29	9 54 44.99	0.14	0.63	13 57 54.2	0.2	8.4	1.0
30	9 54 48.22	0.12	0.63	13 57 51.0	- 0.1	8.4	1.0
Dec. 1	9 54 51.02	0.10	0.63	13 57 50.1	0.0	8.4	1.0
2	9 54 53.38	0.08	0.63	13 57 51.4	+ 0.2	8.4	1.0
3	9 54 55.32	0.07	0.63	13 57 54.9	0.2	8.4	1.0
4	9 54 56.82	0.05	0.63	13 58 0.8	0.3	8.5	1.0
5	9 54 57.89	0.04	0.63	13 58 8.9	0.4	8.5	1.0
6	9 54 58.53	+ 0.02	0.63	13 58 19.3	0.5	8.5	1.0
7	9 54 58.74	0.00	0.63	13 58 32.0	0.6	8.5	1.0
8	9 54 58.52	- 0.02	0.63	13 58 47.0	0.7	8.5	1.0
9	9 54 57.87	0.03	0.63	13 59 4.3	0.7	8.5	1.0
10	9 54 56.79	0.05	0.64	13 59 23.9	0.8	8.6	1.0
11	9 54 55.27	0.06	0.64	13 59 45.6	0.9	8.6	1.0
12	9 54 53.33	0.08	0.64	14 0 9.7	1.0	8.6	1.0
13	9 54 50.96	0.10	0.64	14 0 35.9	1.1	8.6	1.0
14	9 54 48.16	0.12	0.64	14 1 4.4	1.2	8.6	1.0
15	9 54 44.93	0.14	0.64	14 1 35.1	1.3	8.6	1.0
16	9 54 41.27	0.16	0.64	14 2 8.0	1.4	8.6	1.0
17	9 54 37.19	0.17	0.65	14 2 43.0	1.5	8.7	1.0
18	9 54 32.69	0.19	0.65	14 3 20.3	1.6	8.7	1.0
19	9 54 27.76	0.21	0.65	14 3 59.7	1.7	8.7	1.0
20	9 54 22.42	0.23	0.65	14 4 41.3	1.8	8.7	1.0
21	9 54 16.65	0.25	0.65	14 5 25.0	1.9	8.7	1.0
22	9 54 10.47	0.26	0.65	14 6 10.9	2.0	8.7	1.0
23	9 54 3.88	0.28	0.65	14 6 58.8	2.0	8.8	1.0
24	9 53 56.88	0.29	0.65	14 7 48.9	2.1	8.8	1.0
25	9 53 49.48	0.31	0.65	14 8 40.9	2.1	8.8	1.0
26	9 53 41.68	0.32	0.65	14 9 35.0	2.2	8.8	1.0
27	9 53 33.48	0.34	0.65	14 10 31.1	2.3	8.8	1.0
28	9 53 24.89	0.36	0.65	14 11 29.1	2.4	8.8	1.0
29	9 53 15.91	0.38	0.65	14 12 29.0	2.5	8.8	1.0
30	9 53 6.55	0.40	0.66	14 13 30.9	2.6	8.9	1.0
31	9 52 56.81	0.41	0.66	14 14 34.6	2.7	8.9	1.0
32	9 52 46.71	- 0.43	0.66	14 15 40.1	+ 2.8	8.9	1.0

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.			
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
	<div>h m s</div>	<div>North.</div>	<div>I</div>	<div>h m</div>	<div>° ' "</div>	<div>South.</div>	<div>I</div>	
Jan. 1	3 51 37.78	20 1 27.2	.2708366	9 7.7	61 56 20.3	0 9 9.1	.2881213	
2	3 51 30.63	20 1 6.3	.2710969	9 3.6	61 57 1.8	0 9 8.5	.2881172	
3	3 51 23.64	20 0 45.9	.2713625	8 59.6	61 57 43.3	0 9 8.0	.2881132	
4	3 51 16.81	20 0 26.0	.2716332	8 55.5	61 58 24.8	0 9 7.4	.2881092	
5	3 51 10.16	20 0 6.7	.2719091	8 51.5	61 59 6.3	0 9 6.9	.2881052	
6	3 51 3.68	19 59 47.8	.2721899	8 47.4	61 59 47.8	0 9 6.3	.2881012	
7	3 50 57.38	19 59 29.5	.2724756	8 43.4	62 0 29.3	0 9 5.8	.2880972	
8	3 50 51.26	19 59 11.7	.2727639	8 39.4	62 1 10.8	0 9 5.2	.2880932	
9	3 50 45.33	19 58 54.4	.2730610	8 35.3	62 1 52.3	0 9 4.7	.2880891	
10	3 50 39.57	19 58 37.8	.2733605	8 31.3	62 2 33.8	0 9 4.1	.2880851	
11	3 50 34.01	19 58 21.6	.2736644	8 27.3	62 3 15.3	0 9 3.6	.2880811	
12	3 50 28.63	19 58 6.1	.2739726	8 23.2	62 3 56.8	0 9 3.0	.2880771	
13	3 50 23.44	19 57 51.1	.2742849	8 19.2	62 4 38.3	0 9 2.5	.2880731	
14	3 50 18.45	19 57 36.8	.2746012	8 15.2	62 5 19.8	0 9 1.9	.2880690	
15	3 50 13.65	19 57 23.0	.2749213	8 11.2	62 6 1.3	0 9 1.4	.2880650	
16	3 50 9.05	19 57 9.8	.2752453	8 7.2	62 6 42.8	0 9 0.8	.2880610	
17	3 50 4.65	19 56 57.3	.2755729	8 3.2	62 7 24.3	0 9 0.3	.2880570	
18	3 50 0.45	19 56 45.3	.2759041	7 59.2	62 8 5.8	0 8 59.7	.2880530	
19	3 49 56.45	19 56 34.0	.2762387	7 55.2	62 8 47.3	0 8 59.2	.2880490	
20	3 49 52.66	19 56 23.3	.2765766	7 51.2	62 9 28.8	0 8 58.6	.2880450	
21	3 49 49.07	19 56 13.2	.2769178	7 47.2	62 10 10.3	0 8 58.1	.2880409	
22	3 49 45.68	19 56 3.8	.2772620	7 43.3	62 10 51.8	0 8 57.5	.2880369	
23	3 49 42.51	19 55 55.0	.2776092	7 39.3	62 11 33.3	0 8 57.0	.2880329	
24	3 49 39.54	19 55 46.9	.2779593	7 35.3	62 12 14.8	0 8 56.4	.2880289	
25	3 49 36.78	19 55 39.4	.2783122	7 31.3	62 12 56.3	0 8 55.9	.2880249	
26	3 49 34.24	19 55 32.6	.2786677	7 27.3	62 13 37.8	0 8 55.3	.2880208	
27	3 49 31.91	19 55 26.4	.2790257	7 23.4	62 14 19.3	0 8 54.8	.2880168	
28	3 49 29.79	19 55 20.9	.2793861	7 19.4	62 15 0.8	0 8 54.2	.2880128	
29	3 49 27.89	19 55 16.1	.2797488	7 15.4	62 15 42.2	0 8 53.7	.2880088	
30	3 49 26.21	19 55 11.9	.2801136	7 11.5	62 16 23.7	0 8 53.1	.2880048	
Feb. 1	3 49 24.75	19 55 8.4	.2804804	7 7.5	62 17 5.2	0 8 52.6	.2880007	
2	3 49 23.51	19 55 5.6	.2808491	7 3.6	62 17 46.7	0 8 52.0	.2879967	
3	3 49 22.48	19 55 3.5	.2812196	6 59.6	62 18 28.2	0 8 51.4	.2879927	
4	3 49 21.68	19 55 2.1	.2815917	6 55.7	62 19 9.7	0 8 50.9	.2879887	
5	3 49 21.10	19 55 1.4	.2819653	6 51.7	62 19 51.2	0 8 50.3	.2879847	
6	3 49 20.74	19 55 1.3	.2823402	6 47.8	62 20 32.7	0 8 49.8	.2879806	
7	3 49 20.60	19 55 1.9	.2827163	6 43.9	62 21 14.2	0 8 49.2	.2879766	
8	3 49 20.69	19 55 3.3	.2830934	6 40.0	62 21 55.7	0 8 48.7	.2879725	
9	3 49 20.99	19 55 5.3	.2834715	6 36.0	62 22 37.1	0 8 48.1	.2879685	
10	3 49 21.52	19 55 8.0	.2838505	6 32.1	62 23 18.6	0 8 47.6	.2879645	
11	3 49 22.26	19 55 11.4	.2842301	6 28.2	62 24 0.1	0 8 47.0	.2879605	
12	3 49 23.23	19 55 15.5	.2846104	6 24.3	62 24 41.6	0 8 46.5	.2879564	

AT TRANSIT OVER THE MERIDIAN OF GREENWICH

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
<i>North.</i>							
	<i>h m s</i>	<i>s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>"</i>	<i>"</i>
Jan. 1	3 51 35.04	0.30	0.14	20 1 19.2	- 0.9	2.0	0.5
2	3 51 27.97	0.29	0.14	20 0 58.5	0.8	2.0	0.5
3	3 51 21.07	0.28	0.14	20 0 38.4	0.8	2.0	0.5
4	3 51 14.32	0.28	0.14	20 0 18.8	0.8	2.0	0.5
5	3 51 7.75	0.27	0.14	19 59 59.7	0.8	2.0	0.5
6	3 51 1.35	0.26	0.14	19 59 41.0	0.8	2.0	0.5
7	3 50 55.14	0.26	0.14	19 59 22.9	0.7	2.0	0.5
8	3 50 49.10	0.25	0.14	19 59 5.4	0.7	2.0	0.5
9	3 50 43.24	0.24	0.14	19 58 48.4	0.7	2.0	0.5
10	3 50 37.57	0.23	0.14	19 58 32.0	0.7	2.0	0.5
11	3 50 32.10	0.23	0.14	19 58 16.1	0.7	2.0	0.5
12	3 50 26.80	0.22	0.14	19 58 0.8	0.6	2.0	0.5
13	3 50 21.69	0.21	0.14	19 57 46.1	0.6	2.0	0.5
14	3 50 16.78	0.20	0.14	19 57 32.0	0.6	2.0	0.5
15	3 50 12.06	0.19	0.14	19 57 18.5	0.6	2.0	0.5
16	3 50 7.54	0.18	0.14	19 57 5.5	0.5	2.0	0.5
17	3 50 3.22	0.17	0.14	19 56 53.2	0.5	2.0	0.5
18	3 49 59.10	0.17	0.14	19 56 41.5	0.5	2.0	0.5
19	3 49 55.18	0.16	0.14	19 56 30.4	0.5	2.0	0.5
20	3 49 51.46	0.15	0.14	19 56 19.9	0.4	2.0	0.5
21	3 49 47.95	0.14	0.14	19 56 10.1	0.4	2.0	0.5
22	3 49 44.64	0.13	0.14	19 56 0.9	0.4	2.0	0.5
23	3 49 41.54	0.13	0.14	19 55 52.3	0.3	2.0	0.5
24	3 49 38.65	0.12	0.14	19 55 44.5	0.3	2.0	0.5
25	3 49 35.96	0.11	0.14	19 55 37.2	0.3	2.0	0.5
26	3 49 33.50	0.10	0.14	19 55 30.6	0.3	2.0	0.5
27	3 49 31.24	0.09	0.14	19 55 24.6	0.2	2.0	0.5
28	3 49 29.19	0.08	0.14	19 55 19.3	0.2	2.0	0.5
29	3 49 27.36	0.07	0.14	19 55 14.7	0.2	2.0	0.5
30	3 49 25.75	0.06	0.14	19 55 10.8	0.2	2.0	0.5
31	3 49 24.36	0.05	0.14	19 55 7.5	0.1	2.0	0.4
Feb. 1	3 49 23.19	0.05	0.14	19 55 4.9	0.1	2.0	0.4
2	3 49 22.23	0.04	0.13	19 55 3.0	- 0.1	1.9	0.4
3	3 49 21.49	0.03	0.13	19 55 1.8	0.0	1.9	0.4
4	3 49 20.97	0.02	0.13	19 55 1.3	0.0	1.9	0.4
5	3 49 20.68	- 0.01	0.13	19 55 1.4	0.0	1.9	0.4
6	3 49 20.61	0.00	0.13	19 55 2.3	+ 0.1	1.9	0.4
7	3 49 20.75	+ 0.01	0.13	19 55 3.8	0.1	1.9	0.4
8	3 49 21.11	0.02	0.13	19 55 6.0	0.1	1.9	0.4
9	3 49 21.70	0.03	0.13	19 55 8.9	0.1	1.9	0.4
10	3 49 22.50	0.04	0.13	19 55 12.4	0.2	1.9	0.4
11	3 49 23.53	+ 0.05	0.13	19 55 16.7	+ 0.2	1.9	0.4

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>I</i>	<i>h m</i>	<i>° ' "</i>	<i>South. ° ' "</i>	<i>I</i>
Feb. 11	3 49 23.23	19 55 15.5	.2846104	6 24.3	62 24 41.6	8 46.5	.2879564
12	3 49 24.42	19 55 20.3	.2849913	6 20.4	62 25 23.1	8 45.9	.2879524
13	3 49 25.84	19 55 25.7	.2853726	6 16.4	62 26 4.5	8 45.4	.2879484
14	3 49 27.48	19 55 31.8	.2857542	6 12.5	62 26 46.0	8 44.8	.2879443
15	3 49 29.33	19 55 38.6	.2861360	6 8.6	62 27 27.5	8 44.3	.2879403
16	3 49 31.41	19 55 46.1	.2865179	6 4.7	62 28 9.0	8 43.7	.2879363
17	3 49 33.70	19 55 54.2	.2868996	6 0.8	62 28 50.5	8 43.2	.2879323
18	3 49 36.21	19 56 3.0	.2872810	5 57.0	62 29 31.9	8 42.6	.2879283
19	3 49 38.94	19 56 12.5	.2876621	5 53.1	62 30 13.4	8 42.1	.2879242
20	3 49 41.88	19 56 22.7	.2880427	5 49.2	62 30 54.9	8 41.5	.2879202
21	3 49 45.04	19 56 33.5	.2884228	5 45.3	62 31 36.4	8 41.0	.2879162
22	3 49 48.41	19 56 45.0	.2888022	5 41.4	62 32 17.8	8 40.4	.2879121
23	3 49 52.00	19 56 57.2	.2891808	5 37.6	62 32 59.3	8 39.8	.2879081
24	3 49 55.81	19 57 10.0	.2895587	5 33.7	62 33 40.8	8 39.3	.2879041
25	3 49 59.82	19 57 23.4	.2899356	5 29.8	62 34 22.3	8 38.7	.2879000
26	3 50 4.06	19 57 37.5	.2903115	5 26.0	62 35 3.7	8 38.2	.2878960
27	3 50 8.50	19 57 52.3	.2906862	5 22.1	62 35 45.2	8 37.6	.2878920
28	3 50 13.16	19 58 7.6	.2910597	5 18.3	62 36 26.7	8 37.1	.2878880
Mar. 1	3 50 18.02	19 58 23.6	.2914318	5 14.4	62 37 8.2	8 36.5	.2878839
2	3 50 23.10	19 58 40.2	.2918024	5 10.6	62 37 49.6	8 36.0	.2878799
3	3 50 28.38	19 58 57.4	.2921713	5 6.7	62 38 31.1	8 35.4	.2878759
4	3 50 33.87	19 59 15.3	.2925386	5 2.9	62 39 12.6	8 34.9	.2878718
5	3 50 39.56	19 59 33.7	.2929040	4 59.1	62 39 54.1	8 34.3	.2878678
6	3 50 45.46	19 59 52.8	.2932675	4 55.2	62 40 35.5	8 33.8	.2878638
7	3 50 51.55	20 0 12.5	.2936289	4 51.4	62 41 17.0	8 33.2	.2878597
8	3 50 57.85	20 0 32.8	.2939881	4 47.6	62 41 58.5	8 32.6	.2878557
9	3 51 4.34	20 0 53.8	.2943451	4 43.7	62 42 39.9	8 32.1	.2878516
10	3 51 11.03	20 1 15.3	.2946997	4 39.9	62 43 21.4	8 31.5	.2878476
11	3 51 17.92	20 1 37.4	.2950519	4 36.1	62 44 2.9	8 31.0	.2878435
12	3 51 25.00	20 2 0.1	.2954015	4 32.3	62 44 44.3	8 30.4	.2878395
13	3 51 32.27	20 2 23.3	.2957485	4 28.5	62 45 25.8	8 29.9	.2878355
14	3 51 39.73	20 2 47.0	.2960928	4 24.7	62 46 7.3	8 29.3	.2878314
15	3 51 47.37	20 3 11.3	.2964344	4 20.9	62 46 48.7	8 28.8	.2878274
16	3 51 55.20	20 3 36.1	.2967731	4 17.1	62 47 30.2	8 28.2	.2878233
17	3 52 3.22	20 4 1.4	.2971089	4 13.3	62 48 11.7	8 27.7	.2878193
18	3 52 11.41	20 4 27.2	.2974416	4 9.5	62 48 53.2	8 27.1	.2878153
19	3 52 19.78	20 4 53.5	.2977712	4 5.7	62 49 34.6	8 26.6	.2878112
20	3 52 28.33	20 5 20.3	.2980977	4 1.9	62 50 16.1	8 26.0	.2878072
21	3 52 37.05	20 5 47.7	.2984209	3 58.1	62 50 57.6	8 25.5	.2878032
22	3 52 45.95	20 6 15.5	.2987407	3 54.3	62 51 39.1	8 24.9	.2877991
23	3 52 55.02	20 6 43.8	.2990572	3 50.5	62 52 20.5	8 24.3	.2877951
24	3 53 4.25	20 7 12.6	.2993702	3 46.7	62 53 2.0	8 23.8	.2877910

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
				North.			
Feb. 11	^h ^m ^s 3 49 23.53	^s + 0.05	^s 0.13	[°] ['] ["] 19 55 16.7	["] + 0.2	["] 1.9	["] 0.4
12	3 49 24.77	0.06	0.13	19 55 21.6	0.2	1.9	0.4
13	3 49 26.25	0.07	0.13	19 55 27.2	0.2	1.9	0.4
14	3 49 27.94	0.07	0.13	19 55 33.5	0.3	1.9	0.4
15	3 49 29.84	0.08	0.13	19 55 40.4	0.3	1.9	0.4
16	3 49 31.97	0.09	0.13	19 55 48.0	0.3	1.9	0.4
17	3 49 34.31	0.10	0.13	19 55 56.3	0.4	1.9	0.4
18	3 49 36.87	0.11	0.13	19 56 5.3	0.4	1.9	0.4
19	3 49 39.64	0.12	0.13	19 56 15.0	0.4	1.9	0.4
20	3 49 42.62	0.13	0.13	19 56 25.3	0.4	1.9	0.4
21	3 49 45.82	0.14	0.13	19 56 36.2	0.5	1.9	0.4
22	3 49 49.24	0.15	0.13	19 56 47.8	0.5	1.9	0.4
23	3 49 52.87	0.16	0.13	19 57 0.1	0.5	1.9	0.4
24	3 49 56.72	0.17	0.13	19 57 13.1	0.6	1.9	0.4
25	3 50 0.77	0.17	0.13	19 57 26.6	0.6	1.9	0.4
26	3 50 5.04	0.18	0.13	19 57 40.8	0.6	1.9	0.4
27	3 50 9.52	0.19	0.13	19 57 55.6	0.6	1.9	0.4
28	3 50 14.22	0.20	0.13	19 58 11.1	0.7	1.9	0.4
Mar. 1	3 50 19.11	0.21	0.13	19 58 27.2	0.7	1.9	0.4
2	3 50 24.22	0.22	0.13	19 58 43.9	0.7	1.9	0.4
3	3 50 29.53	0.22	0.13	19 59 1.2	0.7	1.9	0.4
4	3 50 35.05	0.23	0.13	19 59 19.1	0.8	1.9	0.4
5	3 50 40.77	0.24	0.13	19 59 37.6	0.8	1.9	0.4
6	3 50 46.69	0.25	0.13	19 59 56.8	0.8	1.9	0.4
7	3 50 52.81	0.26	0.13	20 0 16.6	0.8	1.9	0.4
8	3 50 59.13	0.27	0.13	20 0 37.0	0.9	1.9	0.4
9	3 51 5.64	0.27	0.13	20 0 58.0	0.9	1.9	0.4
10	3 51 12.35	0.28	0.13	20 1 19.6	0.9	1.9	0.4
11	3 51 19.26	0.29	0.13	20 1 41.7	0.9	1.9	0.4
12	3 51 26.35	0.30	0.13	20 2 4.4	1.0	1.9	0.4
13	3 51 33.64	0.31	0.13	20 2 27.7	1.0	1.9	0.4
14	3 51 41.11	0.32	0.13	20 2 51.5	1.0	1.9	0.4
15	3 51 48.77	0.32	0.13	20 3 15.7	1.0	1.9	0.4
16	3 51 56.62	0.33	0.13	20 3 40.5	1.0	1.9	0.4
17	3 52 4.64	0.34	0.13	20 4 5.9	1.1	1.9	0.4
18	3 52 12.85	0.35	0.13	20 4 31.7	1.1	1.9	0.4
19	3 52 21.23	0.35	0.13	20 4 58.1	1.1	1.9	0.4
20	3 52 29.78	0.36	0.13	20 5 24.9	1.1	1.9	0.4
21	3 52 38.51	0.37	0.13	20 5 52.2	1.1	1.9	0.4
22	3 52 47.41	0.37	0.13	20 6 20.1	1.2	1.9	0.4
23	3 52 56.48	0.38	0.13	20 6 48.4	1.2	1.9	0.4
24	3 53 5.72	+ 0.39	0.13	20 7 17.2	+ 1.2	1.9	0.4

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>I</i>	<i>h m</i>	<i>° ' "</i>	<i>South. ° ' "</i>	<i>I</i>
Mar. 24	3 53 4 ²⁵	20 7 12 ⁶	2993702	3 46 ⁷	62 53 2 ⁰	0 8 23 ⁸	28777910
25	3 53 13 ⁶⁶	20 7 41 ⁹	2996796	3 43 ⁰	62 53 43 ⁵	0 8 23 ²	28777870
26	3 53 23 ²⁴	20 8 11 ⁷	2999854	3 39 ²	62 54 25 ⁰	0 8 22 ⁷	28777830
27	3 53 32 ⁹⁷	20 8 41 ⁹	3002875	3 35 ⁴	62 55 6 ⁵	0 8 22 ¹	28777890
28	3 53 42 ⁸⁷	20 9 12 ⁵	3005859	3 31 ⁷	62 55 47 ⁹	0 8 21 ⁶	28777748
29	3 53 52 ⁹²	20 9 43 ⁶	3008804	3 27 ⁹	62 56 29 ⁴	0 8 21 ⁰	28777708
30	3 54 3 ¹³	20 10 15 ¹	3011710	3 24 ¹	62 57 10 ⁹	0 8 20 ⁵	28777667
31	3 54 13 ⁴⁹	20 10 47 ⁰	3014576	3 20 ⁴	62 57 52 ⁴	0 8 19 ⁹	28777627
Apr. 1	3 54 24 ⁰¹	20 11 19 ³	3017401	3 16 ⁶	62 58 33 ⁹	0 8 19 ⁴	28777586
2	3 54 34 ⁶⁸	20 11 51 ⁹	3020185	3 12 ⁹	62 59 15 ⁴	0 8 18 ⁸	28777546
3	3 54 45 ⁴⁹	20 12 25 ⁰	3022927	3 9 ¹	62 59 56 ⁸	0 8 18 ³	28777505
4	3 54 56 ⁴⁶	20 12 58 ⁴	3025627	3 5 ⁴	63 0 38 ³	0 8 17 ⁷	28777465
5	3 55 7 ⁵⁶	20 13 32 ²	3028283	3 1 ⁶	63 1 19 ⁸	0 8 17 ²	28777424
6	3 55 18 ⁸⁰	20 14 6 ³	3030895	2 57 ⁹	63 2 1 ³	0 8 16 ⁶	28777384
7	3 55 30 ¹⁸	20 14 40 ⁸	3033462	2 54 ¹	63 2 42 ⁸	0 8 16 ⁰	28777344
8	3 55 41 ⁷⁰	20 15 15 ⁷	3035984	2 50 ⁴	63 3 24 ³	0 8 15 ⁵	28777303
9	3 55 53 ³⁴	20 15 50 ⁹	3038460	2 46 ⁶	63 4 5 ⁸	0 8 14 ⁹	28777263
10	3 56 5 ¹²	20 16 26 ⁴	3040890	2 42 ⁹	63 4 47 ³	0 8 14 ⁴	28777222
11	3 56 17 ⁰²	20 17 2 ²	3043273	2 39 ²	63 5 28 ⁹	0 8 13 ⁸	28777182
12	3 56 29 ⁰⁴	20 17 38 ³	3045609	2 35 ⁴	63 6 10 ⁴	0 8 13 ³	28777141
13	3 56 41 ¹⁸	20 18 14 ⁷	3047898	2 31 ⁷	63 6 51 ⁹	0 8 12 ⁷	28777101
14	3 56 53 ⁴⁴	20 18 51 ⁴	3050139	2 28 ⁰	63 7 33 ⁴	0 8 12 ²	28777060
15	3 57 5 ⁸¹	20 19 28 ³	3052331	2 24 ²	63 8 14 ⁹	0 8 11 ⁶	28777020
16	3 57 18 ²⁹	20 20 5 ⁵	3054475	2 20 ⁵	63 8 56 ⁴	0 8 11 ¹	28776979
17	3 57 30 ⁸⁹	20 20 43 ⁰	3056570	2 16 ⁸	63 9 37 ⁹	0 8 10 ⁵	28776938
18	3 57 43 ⁵⁹	20 21 20 ⁷	3058615	2 13 ¹	63 10 19 ⁴	0 8 10 ⁰	28776897
19	3 57 56 ⁴⁰	20 21 58 ⁷	3060611	2 9 ⁴	63 11 1 ⁰	0 8 9 ⁴	28776857
20	3 58 9 ³²	20 22 36 ⁹	3062556	2 5 ⁶	63 11 42 ⁵	0 8 8 ⁹	28776816
21	3 58 22 ³³	20 23 15 ³	3064451	2 1 ⁹	63 12 24 ⁰	0 8 8 ³	28776776
22	3 58 35 ⁴⁴	20 23 53 ⁹	3066295	1 58 ²	63 13 5 ⁶	0 8 7 ⁷	28776735
23	3 58 48 ⁶⁵	20 24 32 ⁸	3068088	1 54 ⁵	63 13 47 ¹	0 8 7 ²	28776694
24	3 59 1 ⁹⁵	20 25 11 ⁸	3069829	1 50 ⁸	63 14 28 ⁶	0 8 6 ⁶	28776654
25	3 59 15 ³⁴	20 25 51 ⁰	3071518	1 47 ¹	63 15 10 ¹	0 8 6 ¹	28776613
26	3 59 28 ⁸¹	20 26 30 ⁴	3073154	1 43 ⁴	63 15 51 ⁷	0 8 5 ⁵	28776573
27	3 59 42 ³⁷	20 27 9 ⁹	3074738	1 39 ⁷	63 16 33 ²	0 8 5 ⁰	28776532
28	3 59 56 ⁰¹	20 27 49 ⁶	3076268	1 36 ⁰	63 17 14 ⁸	0 8 4 ⁴	28776491
29	4 0 9 ⁷³	20 28 29 ⁴	3077745	1 32 ³	63 17 56 ³	0 8 3 ⁹	28776451
30	4 0 23 ⁵³	20 29 9 ⁴	3079168	1 28 ⁶	63 18 37 ⁸	0 8 3 ³	28776410
May 1	4 0 37 ⁴⁰	20 29 49 ⁵	3080536	1 24 ⁹	63 19 19 ⁴	0 8 2 ⁸	28776369
2	4 0 51 ³⁵	20 30 29 ⁸	3081850	1 21 ²	63 20 0 ⁹	0 8 2 ²	28776328
3	4 1 5 ³⁶	20 31 10 ¹	3083109	1 17 ⁵	63 20 42 ⁵	0 8 1 ⁷	28776288
4	4 1 19 ⁴⁴	20 31 50 ⁶	3084312	1 13 ⁸	63 21 24 ⁰	0 8 1 ¹	28776247

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Std. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				North.			
	^h ^m ^s	^s	^s	[°] ['] ["]	[°] ['] ["]	["]	["]
Mar. 24	3 53 5 ⁷ 2	+ 0 ³ 9	0 ¹ 3	20 7 17 ²	+ 1 ²	1 ⁹	0 ⁴
25	3 53 15 ¹ 3	0 ⁴ 0	0 ¹ 3	20 7 46 ⁵	1 ²	1 ⁹	0 ⁴
26	3 53 24 ⁷ 1	0 ⁴ 0	0 ¹ 3	20 8 16 ²	1 ²	1 ⁹	0 ⁴
27	3 53 34 ⁴ 4	0 ⁴ 1	0 ¹ 3	20 8 46 ⁴	1 ³	1 ⁹	0 ⁴
28	3 53 44 ³ 4	0 ⁴ 1	0 ¹ 3	20 9 17 ¹	1 ³	1 ⁹	0 ⁴
29	3 53 54 ³ 9	0 ⁴ 2	0 ¹ 3	20 9 48 ¹	1 ³	1 ⁹	0 ⁴
30	3 54 4 ⁵ 9	0 ⁴ 3	0 ¹ 3	20 10 19 ⁶	1 ³	1 ⁹	0 ⁴
31	3 54 14 ⁹ 5	0 ⁴ 3	0 ¹ 3	20 10 51 ⁵	1 ³	1 ⁹	0 ⁴
Apr. 1	3 54 25 ⁴ 6	0 ⁴ 4	0 ¹ 3	20 11 23 ⁷	1 ³	1 ⁹	0 ⁴
2	3 54 36 ¹ 2	0 ⁴ 5	0 ¹ 3	20 11 56 ³	1 ⁴	1 ⁹	0 ⁴
3	3 54 46 ⁹ 2	0 ⁴ 5	0 ¹ 3	20 12 29 ³	1 ⁴	1 ⁹	0 ⁴
4	3 54 57 ⁸ 8	0 ⁴ 6	0 ¹ 3	20 13 2 ⁷	1 ⁴	1 ⁹	0 ⁴
5	3 55 8 ⁹ 7	0 ⁴ 7	0 ¹ 3	20 13 36 ⁴	1 ⁴	1 ⁹	0 ⁴
6	3 55 20 ² 0	0 ⁴ 8	0 ¹ 3	20 14 10 ⁵	1 ⁴	1 ⁹	0 ⁴
7	3 55 31 ⁵ 7	0 ⁴ 8	0 ¹ 3	20 14 45 ⁰	1 ⁴	1 ⁹	0 ⁴
8	3 55 43 ⁰ 7	0 ⁴ 8	0 ¹ 3	20 15 19 ⁸	1 ⁵	1 ⁹	0 ⁴
9	3 55 54 ⁷ 0	0 ⁴ 9	0 ¹ 3	20 15 54 ⁹	1 ⁵	1 ⁹	0 ⁴
10	3 56 6 ⁴ 6	0 ⁴ 9	0 ¹ 3	20 16 30 ⁴	1 ⁵	1 ⁸	0 ⁴
11	3 56 18 ³ 4	0 ⁴ 9	0 ¹ 3	20 17 6 ²	1 ⁵	1 ⁸	0 ⁴
12	3 56 30 ³ 5	0 ⁵ 0	0 ¹ 3	20 17 42 ²	1 ⁵	1 ⁸	0 ⁴
13	3 56 42 ⁴ 7	0 ⁵ 1	0 ¹ 3	20 18 18 ⁶	1 ⁵	1 ⁸	0 ⁴
14	3 56 54 ⁷ 1	0 ⁵ 1	0 ¹ 3	20 18 55 ²	1 ⁵	1 ⁸	0 ⁴
15	3 57 7 ⁰ 6	0 ⁵ 2	0 ¹ 3	20 19 32 ⁰	1 ⁵	1 ⁸	0 ⁴
16	3 57 19 ⁵ 2	0 ⁵ 2	0 ¹ 3	20 20 9 ²	1 ⁶	1 ⁸	0 ⁴
17	3 57 32 ¹ 0	0 ⁵ 3	0 ¹ 3	20 20 46 ⁶	1 ⁶	1 ⁸	0 ⁴
18	3 57 44 ⁷ 8	0 ⁵ 3	0 ¹ 3	20 21 24 ²	1 ⁶	1 ⁸	0 ⁴
19	3 57 57 ⁵ 6	0 ⁵ 3	0 ¹ 3	20 22 2 ¹	1 ⁶	1 ⁸	0 ⁴
20	3 58 10 ⁴ 5	0 ⁵ 4	0 ¹ 3	20 22 40 ²	1 ⁶	1 ⁸	0 ⁴
21	3 58 23 ⁴ 4	0 ⁵ 4	0 ¹ 3	20 23 18 ⁶	1 ⁶	1 ⁸	0 ⁴
22	3 58 36 ⁵ 3	0 ⁵ 5	0 ¹ 3	20 23 57 ²	1 ⁶	1 ⁸	0 ⁴
23	3 58 49 ⁷ 1	0 ⁵ 5	0 ¹ 3	20 24 35 ⁹	1 ⁶	1 ⁸	0 ⁴
24	3 59 2 ⁹ 8	0 ⁵ 6	0 ¹ 3	20 25 14 ⁸	1 ⁶	1 ⁸	0 ⁴
25	3 59 16 ³ 4	0 ⁵ 6	0 ¹ 3	20 25 53 ⁹	1 ⁶	1 ⁸	0 ⁴
26	3 59 29 ⁷ 8	0 ⁵ 6	0 ¹ 3	20 26 33 ²	1 ⁶	1 ⁸	0 ⁴
27	3 59 43 ³ 1	0 ⁵ 7	0 ¹ 3	20 27 12 ⁷	1 ⁶	1 ⁸	0 ⁴
28	3 59 56 ⁹ 2	0 ⁵ 7	0 ¹ 3	20 27 52 ²	1 ⁷	1 ⁸	0 ⁴
29	4 0 10 ⁶ 1	0 ⁵ 7	0 ¹ 3	20 28 32 ⁰	1 ⁷	1 ⁸	0 ⁴
30	4 0 24 ³ 8	0 ⁵ 8	0 ¹ 3	20 29 11 ⁹	1 ⁷	1 ⁸	0 ⁴
May 1	4 0 38 ² 2	0 ⁵ 8	0 ¹ 3	20 29 51 ⁹	1 ⁷	1 ⁸	0 ⁴
2	4 0 52 ¹ 4	0 ⁵ 8	0 ¹ 3	20 30 32 ⁰	1 ⁷	1 ⁸	0 ⁴
3	4 1 6 ¹ 2	0 ⁵ 9	0 ¹ 3	20 31 12 ³	1 ⁷	1 ⁸	0 ⁴
4	4 1 20 ¹ 7	+ 0 ⁵ 9	0 ¹ 3	20 31 52 ⁶	+ 1 ⁷	1 ⁸	0 ⁴

MEAN TIME.							
Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
May	h m s	North. ° ' "		h m	° ' "	South. ° ' "	I
4	4 1 19.44	20 31 50.6	3084312	1 13.8	63 21 24.0	0 8 1.1	2876247
5	4 1 33.58	20 32 31.1	3085461	1 10.1	63 22 5.6	0 8 0.6	2876206
6	4 1 47.77	20 33 11.7	3086553	1 6.4	63 22 47.1	0 8 0.0	2876166
7	4 2 2.02	20 33 52.3	3087590	1 2.7	63 23 28.7	0 7 59.4	2876125
8	4 2 16.33	20 34 33.1	3088571	0 59.0	63 24 10.2	0 7 58.9	2876085
9	4 2 30.68	20 35 13.8	3089497	0 55.3	63 24 51.8	0 7 58.3	2876044
10	4 2 45.08	20 35 54.6	3090366	0 51.6	63 25 33.4	0 7 57.8	2876003
11	4 2 59.53	20 36 35.4	3091179	0 47.9	63 26 14.9	0 7 57.2	2875963
12	4 3 14.01	20 37 16.3	3091935	0 44.2	63 26 56.5	0 7 56.7	2875922
13	4 3 28.53	20 37 57.2	3092636	0 40.5	63 27 38.0	0 7 56.1	2875881
14	4 3 43.09	20 38 38.1	3093280	0 36.8	63 28 19.6	0 7 55.6	2875840
15	4 3 57.68	20 39 19.1	3093868	0 33.1	63 29 1.2	0 7 55.0	2875800
16	4 4 12.30	20 40 0.0	3094399	0 29.4	63 29 42.7	0 7 54.5	2875759
17	4 4 26.95	20 40 40.9	3094874	0 25.8	63 30 24.3	0 7 53.9	2875718
18	4 4 41.62	20 41 21.8	3095292	0 22.1	63 31 5.9	0 7 53.4	2875677
19	4 4 56.32	20 42 2.7	3095654	0 18.4	63 31 47.5	0 7 52.8	2875636
20	4 5 11.03	20 42 43.5	3095959	0 14.7	63 32 29.1	0 7 52.3	2875596
21	4 5 25.77	20 43 24.3	3096208	0 11.0	63 33 10.6	0 7 51.7	2875555
22	4 5 40.52	20 44 5.0	3096400	0 7.3	63 33 52.2	0 7 51.2	2875514
23	4 5 55.28	20 44 45.7	3096535	0 3.6	63 34 33.8	0 7 50.6	2875473
24	4 6 10.04	20 45 26.3	3096614	23 56.3	63 35 15.4	0 7 50.0	2875432
25	4 6 24.81	20 46 6.8	3096635	23 52.6	63 35 57.0	0 7 49.5	2875392
26	4 6 39.59	20 46 47.3	3096600	23 48.9	63 36 38.5	0 7 48.9	2875351
27	4 6 54.37	20 47 27.6	3096508	23 45.2	63 37 20.1	0 7 48.4	2875310
28	4 7 9.14	20 48 7.8	3096358	23 41.5	63 38 1.7	0 7 47.8	2875269
29	4 7 23.91	20 48 48.0	3096152	23 37.8	63 38 43.3	0 7 47.3	2875229
30	4 7 38.67	20 49 28.0	3095888	23 34.1	63 39 24.9	0 7 46.7	2875188
31	4 7 53.42	20 50 7.9	3095567	23 30.4	63 40 6.5	0 7 46.2	2875147
June 1	4 8 8.16	20 50 47.7	3095189	23 26.8	63 40 48.1	0 7 45.6	2875106
2	4 8 22.88	20 51 27.3	3094754	23 23.1	63 41 29.7	0 7 45.1	2875065
3	4 8 37.58	20 52 6.8	3094262	23 19.4	63 42 11.3	0 7 44.5	2875025
4	4 8 52.25	20 52 46.1	3093713	23 15.7	63 42 52.9	0 7 44.0	2874984
5	4 9 6.90	20 53 25.3	3093108	23 12.0	63 43 34.5	0 7 43.4	2874943
6	4 9 21.52	20 54 4.3	3092447	23 8.3	63 44 16.1	0 7 42.8	2874902
7	4 9 36.11	20 54 43.2	3091730	23 4.6	63 44 57.7	0 7 42.3	2874861
8	4 9 50.66	20 55 21.8	3090957	23 0.9	63 45 39.3	0 7 41.7	2874821
9	4 10 5.17	20 56 0.3	3090129	22 57.2	63 46 21.0	0 7 41.2	2874780
10	4 10 19.64	20 56 38.6	3089245	22 53.6	63 47 2.6	0 7 40.6	2874739
11	4 10 34.07	20 57 16.7	3088306	22 49.9	63 47 44.2	0 7 40.1	2874698
12	4 10 48.45	20 57 54.6	3087313	22 46.2	63 48 25.8	0 7 39.5	2874657
13	4 11 2.78	20 58 32.3	3086264	22 42.5	63 49 7.4	0 7 39.0	2874617
14	4 11 17.06	20 59 9.7	3085162	22 38.8	63 49 49.0	0 7 38.4	2874576

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
				North.			
	^h ^m ^s	^s	^s	[°] ['] ["]	["]	["]	["]
May 4	4 1 20.17	+ 0.59	0.13	20 31 52.6	+ 1.7	1.8	0.4
5	4 1 34.27	0.59	0.13	20 32 33.1	1.7	1.8	0.4
6	4 1 48.43	0.59	0.13	20 33 13.6	1.7	1.8	0.4
7	4 2 2.65	0.60	0.13	20 33 54.1	1.7	1.8	0.4
8	4 2 16.92	0.60	0.13	20 34 34.7	1.7	1.8	0.4
9	4 2 31.23	0.60	0.13	20 35 15.4	1.7	1.8	0.4
10	4 2 45.60	0.60	0.13	20 35 56.1	1.7	1.8	0.4
11	4 3 0.01	0.60	0.13	20 36 36.8	1.7	1.8	0.4
12	4 3 14.46	0.60	0.13	20 37 17.6	1.7	1.8	0.4
13	4 3 28.94	0.61	0.13	20 37 58.4	1.7	1.8	0.4
14	4 3 43.46	0.61	0.13	20 38 39.2	1.7	1.8	0.4
15	4 3 58.02	0.61	0.13	20 39 20.0	1.7	1.8	0.4
16	4 4 12.60	0.61	0.13	20 40 0.8	1.7	1.8	0.4
17	4 4 27.21	0.61	0.13	20 40 41.6	1.7	1.8	0.4
18	4 4 41.85	0.61	0.13	20 41 22.4	1.7	1.8	0.4
19	4 4 56.51	0.61	0.13	20 42 3.2	1.7	1.8	0.4
20	4 5 11.18	0.61	0.13	20 42 43.9	1.7	1.8	0.4
21	4 5 25.88	0.61	0.13	20 43 24.6	1.7	1.8	0.4
22	4 5 40.60	0.61	0.13	20 44 5.2	1.7	1.8	0.4
23	4 5 55.32	0.61	0.13	20 44 45.8	1.7	1.8	0.4
24	{ 5 9 24.9 }	{ 0.61 }	{ 0.13 }	{ 20 45 26.3 }	{ 1.7 }	{ 1.8 }	{ 0.4 }
25	4 6 39.52	0.61	0.13	20 46 47.0	1.7	1.8	0.4
26	4 6 54.25	0.61	0.13	20 47 27.3	1.7	1.8	0.4
27	4 7 8.99	0.61	0.13	20 48 7.4	1.7	1.8	0.4
28	4 7 23.72	0.61	0.13	20 48 47.5	1.7	1.8	0.4
29	4 7 38.45	0.61	0.13	20 49 27.4	1.7	1.8	0.4
30	4 7 53.16	0.61	0.13	20 50 7.2	1.7	1.8	0.4
31	4 8 7.86	0.61	0.13	20 50 46.8	1.7	1.8	0.4
June 1	4 8 22.54	0.61	0.13	20 51 26.4	1.6	1.8	0.4
2	4 8 37.20	0.61	0.13	20 52 5.8	1.6	1.8	0.4
3	4 8 51.84	0.61	0.13	20 52 45.0	1.6	1.8	0.4
4	4 9 6.45	0.61	0.13	20 53 24.1	1.6	1.8	0.4
5	4 9 21.03	0.61	0.13	20 54 3.0	1.6	1.8	0.4
6	4 9 35.58	0.61	0.13	20 54 41.8	1.6	1.8	0.4
7	4 9 50.10	0.61	0.13	20 55 20.4	1.6	1.8	0.4
8	4 10 4.58	0.60	0.13	20 55 58.7	1.6	1.8	0.4
9	4 10 19.01	0.60	0.13	20 56 36.9	1.6	1.8	0.4
10	4 10 33.41	0.60	0.13	20 57 14.9	1.6	1.8	0.4
11	4 10 47.75	0.60	0.13	20 57 52.7	1.6	1.8	0.4
12	4 11 2.05	0.59	0.13	20 58 30.3	1.6	1.8	0.4
13	4 11 16.30	0.59	0.13	20 59 7.7	1.6	1.8	0.4
14	4 11 30.49	+ 0.59	0.13	20 59 44.8	+ 1.5	1.8	0.4

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>I</i>	<i>h m</i>	<i>° ' "</i>	<i>South. ° ' "</i>	<i>I</i>
June 14	4 11 17.06	20 59 9.7	.3085162	22 38.8	63 49 49.0	0 7 38.4	.2874576
15	4 11 31.29	20 59 46.9	.3084006	22 35.1	63 50 30.7	0 7 37.8	.2874535
16	4 11 45.46	21 0 23.9	.3082795	22 31.4	63 51 12.3	0 7 37.3	.2874494
17	4 11 59.57	21 1 0.7	.3081531	22 27.7	63 51 53.9	0 7 36.7	.2874453
18	4 12 13.63	21 1 37.2	.3080214	22 24.0	63 52 35.5	0 7 36.2	.2874412
19	4 12 27.63	21 2 13.5	.3078843	22 20.3	63 53 17.1	0 7 35.6	.2874371
20	4 12 41.55	21 2 49.5	.3077419	22 16.6	63 53 58.8	0 7 35.1	.2874330
21	4 12 55.41	21 3 25.3	.3075943	22 12.9	63 54 40.4	0 7 34.5	.2874289
22	4 13 9.19	21 4 0.8	.3074414	22 9.2	63 55 22.0	0 7 33.9	.2874248
23	4 13 22.90	21 4 36.1	.3072833	22 5.5	63 56 3.6	0 7 33.4	.2874207
24	4 13 36.53	21 5 11.1	.3071199	22 1.7	63 56 45.3	0 7 32.8	.2874167
25	4 13 50.09	21 5 45.8	.3069514	21 58.0	63 57 26.9	0 7 32.3	.2874126
26	4 14 3.56	21 6 20.2	.3067777	21 54.3	63 58 8.5	0 7 31.7	.2874085
27	4 14 16.94	21 6 54.4	.3065989	21 50.6	63 58 50.2	0 7 31.2	.2874044
28	4 14 30.24	21 7 28.2	.3064150	21 46.9	63 59 31.8	0 7 30.6	.2874003
29	4 14 43.44	21 8 1.7	.3062260	21 43.2	64 0 13.4	0 7 30.0	.2873962
30	4 14 56.55	21 8 34.9	.3060320	21 39.5	64 0 55.0	0 7 29.5	.2873921
July 1	4 15 9.56	21 9 7.8	.3058331	21 35.8	64 1 36.7	0 7 28.9	.2873881
2	4 15 22.48	21 9 40.3	.3056293	21 32.0	64 2 18.3	0 7 28.4	.2873840
3	4 15 35.29	21 10 12.5	.3054206	21 28.3	64 2 59.9	0 7 27.8	.2873799
4	4 15 47.99	21 10 44.4	.3052070	21 24.6	64 3 41.6	0 7 27.3	.2873758
5	4 16 0.59	21 11 16.0	.3049887	21 20.9	64 4 23.2	0 7 26.7	.2873717
6	4 16 13.08	21 11 47.2	.3047657	21 17.1	64 5 4.8	0 7 26.1	.2873676
7	4 16 25.45	21 12 18.1	.3045380	21 13.4	64 5 46.5	0 7 25.6	.2873635
8	4 16 37.71	21 12 48.7	.3043057	21 9.7	64 6 28.1	0 7 25.0	.2873594
9	4 16 49.85	21 13 18.9	.3040688	21 5.9	64 7 9.7	0 7 24.5	.2873553
10	4 17 1.87	21 13 48.7	.3038275	21 2.2	64 7 51.3	0 7 23.9	.2873512
11	4 17 13.77	21 14 18.2	.3035816	20 58.5	64 8 33.0	0 7 23.4	.2873472
12	4 17 25.55	21 14 47.3	.3033314	20 54.7	64 9 14.6	0 7 22.8	.2873431
13	4 17 37.20	21 15 16.1	.3030768	20 51.0	64 9 56.2	0 7 22.2	.2873390
14	4 17 48.72	21 15 44.5	.3028179	20 47.3	64 10 37.9	0 7 21.7	.2873349
15	4 18 0.12	21 16 12.5	.3025548	20 43.5	64 11 19.5	0 7 21.1	.2873308
16	4 18 11.37	21 16 40.1	.3022875	20 39.8	64 12 1.1	0 7 20.6	.2873267
17	4 18 22.49	21 17 7.4	.3020161	20 36.0	64 12 42.7	0 7 20.0	.2873226
18	4 18 33.47	21 17 34.3	.3017405	20 32.3	64 13 24.4	0 7 19.5	.2873185
19	4 18 44.30	21 18 0.8	.3014609	20 28.5	64 14 6.0	0 7 18.9	.2873145
20	4 18 54.99	21 18 26.8	.3011773	20 24.8	64 14 47.6	0 7 18.3	.2873104
21	4 19 5.54	21 18 52.5	.3008898	20 21.0	64 15 29.3	0 7 17.8	.2873063
22	4 19 15.94	21 19 17.8	.3005984	20 17.2	64 16 10.9	0 7 17.2	.2873022
23	4 19 26.19	21 19 42.7	.3003032	20 13.5	64 16 52.5	0 7 16.7	.2872981
24	4 19 36.29	21 20 7.2	.3000042	20 9.7	64 17 34.1	0 7 16.1	.2872940
25	4 19 46.24	21 20 31.2	.2997015	20 5.9	64 18 15.8	0 7 15.6	.2872899

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	<i>h m s</i>	<i>+ "</i>	<i>"</i>	<i>North.</i> <i>° ' "</i>	<i>+ "</i>	<i>"</i>	<i>"</i>
June 14	4 11 30.49	+ 0.59	0.13	20 59 44.8	+ 1.5	1.8	0.4
15	4 11 44.63	0.59	0.13	21 0 21.8	1.5	1.8	0.4
16	4 11 58.71	0.59	0.13	21 0 58.4	1.5	1.8	0.4
17	4 12 12.73	0.58	0.13	21 1 34.9	1.5	1.8	0.4
18	4 12 26.69	0.58	0.13	21 2 11.1	1.5	1.8	0.4
19	4 12 40.59	0.58	0.13	21 2 47.1	1.5	1.8	0.4
20	4 12 54.41	0.58	0.13	21 3 22.8	1.5	1.8	0.4
21	4 13 8.17	0.57	0.13	21 3 58.2	1.5	1.8	0.4
22	4 13 21.85	0.57	0.13	21 4 33.4	1.5	1.8	0.4
23	4 13 35.45	0.57	0.13	21 5 8.3	1.5	1.8	0.4
24	4 13 48.98	0.56	0.13	21 5 43.0	1.4	1.8	0.4
25	4 14 2.42	0.56	0.13	21 6 17.3	1.4	1.8	0.4
26	4 14 15.78	0.55	0.13	21 6 51.4	1.4	1.8	0.4
27	4 14 29.05	0.55	0.13	21 7 25.2	1.4	1.8	0.4
28	4 14 42.22	0.55	0.13	21 7 58.6	1.4	1.8	0.4
29	4 14 55.31	0.54	0.13	21 8 31.7	1.4	1.8	0.4
30	4 15 8.30	0.54	0.13	21 9 4.5	1.4	1.8	0.4
July 1	4 15 21.18	0.53	0.13	21 9 37.1	1.3	1.8	0.4
2	4 15 33.97	0.53	0.13	21 10 9.2	1.3	1.8	0.4
3	4 15 46.66	0.53	0.13	21 10 41.1	1.3	1.8	0.4
4	4 15 59.23	0.52	0.13	21 11 12.6	1.3	1.8	0.4
5	4 16 11.70	0.52	0.13	21 11 43.8	1.3	1.8	0.4
6	4 16 24.05	0.51	0.13	21 12 14.6	1.3	1.8	0.4
7	4 16 36.29	0.51	0.13	21 12 45.1	1.3	1.8	0.4
8	4 16 48.42	0.50	0.13	21 13 15.3	1.3	1.8	0.4
9	4 17 0.42	0.50	0.14	21 13 45.1	1.2	1.9	0.4
10	4 17 12.30	0.49	0.14	21 14 14.6	1.2	1.9	0.4
11	4 17 24.07	0.49	0.14	21 14 43.7	1.2	1.9	0.4
12	4 17 35.71	0.48	0.14	21 15 12.4	1.2	1.9	0.4
13	4 17 47.22	0.48	0.14	21 15 40.8	1.2	1.9	0.4
14	4 17 58.60	0.47	0.14	21 16 8.7	1.2	1.9	0.4
15	4 18 9.85	0.47	0.14	21 16 36.4	1.1	1.9	0.4
16	4 18 20.95	0.46	0.14	21 17 3.7	1.1	1.9	0.4
17	4 18 31.92	0.45	0.14	21 17 30.5	1.1	1.9	0.4
18	4 18 42.75	0.45	0.14	21 17 56.9	1.1	1.9	0.4
19	4 18 53.43	0.44	0.14	21 18 23.0	1.1	1.9	0.4
20	4 19 3.97	0.44	0.14	21 18 48.7	1.1	1.9	0.4
21	4 19 14.37	0.43	0.14	21 19 14.0	1.1	1.9	0.4
22	4 19 24.62	0.42	0.14	21 19 38.9	1.0	1.9	0.4
23	4 19 34.71	0.42	0.14	21 20 3.4	1.0	1.9	0.4
24	4 19 44.66	0.41	0.14	21 20 27.4	1.0	1.9	0.4
25	4 19 54.45	+ 0.40	0.14	21 20 51.1	+ 1.0	1.9	0.4

MEAN TIME.								
Month and Day.	Geocentric.				Heliocentric.			
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
	North.		I			South.	I	
	<i>h m s</i>	<i>° ' "</i>		<i>h m</i>	<i>° ' "</i>	<i>° ' "</i>		
July 25	4 19 46.24	21 20 31.2	.2997015	20 5.9	64 18 15.8	0 7 15.6	.2872899	
26	4 19 56.04	21 20 54.9	.2993951	20 2.2	64 18 57.4	0 7 15.0	.2872858	
27	4 20 5.67	21 21 18.1	.2990852	19 58.4	64 19 39.0	0 7 14.5	.2872817	
28	4 20 15.14	21 21 40.9	.2987718	19 54.6	64 20 20.6	0 7 13.9	.2872776	
29	4 20 24.45	21 22 3.3	.2984550	19 50.8	64 21 2.3	0 7 13.3	.2872735	
30	4 20 33.59	21 22 25.2	.2981349	19 47.0	64 21 43.9	0 7 12.8	.2872694	
31	4 20 42.56	21 22 46.7	.2978115	19 43.3	64 22 25.5	0 7 12.2	.2872653	
Aug. 1	4 20 51.36	21 23 7.8	.2974850	19 39.5	64 23 7.1	0 7 11.7	.2872612	
2	4 20 59.99	21 23 28.4	.2971554	19 35.7	64 23 48.8	0 7 11.1	.2872571	
3	4 21 8.45	21 23 48.6	.2968227	19 31.9	64 24 30.4	0 7 10.6	.2872530	
4	4 21 16.73	21 24 8.3	.2964871	19 28.1	64 25 12.0	0 7 10.0	.2872489	
5	4 21 24.82	21 24 27.6	.2961486	19 24.3	64 25 53.6	0 7 9.4	.2872448	
6	4 21 32.73	21 24 46.4	.2958074	19 20.5	64 26 35.2	0 7 8.9	.2872407	
7	4 21 40.47	21 25 4.8	.2954634	19 16.7	64 27 16.8	0 7 8.3	.2872366	
8	4 21 48.02	21 25 22.7	.2951168	19 12.9	64 27 58.5	0 7 7.8	.2872325	
9	4 21 55.39	21 25 40.2	.2947677	19 9.1	64 28 40.1	0 7 7.2	.2872284	
10	4 22 2.57	21 25 57.2	.2944162	19 5.3	64 29 21.7	0 7 6.7	.2872242	
11	4 22 9.57	21 26 13.8	.2940624	19 1.4	64 30 3.3	0 7 6.1	.2872201	
12	4 22 16.37	21 26 29.9	.2937063	18 57.6	64 30 44.9	0 7 5.6	.2872160	
13	4 22 22.99	21 26 45.5	.2933481	18 53.8	64 31 26.5	0 7 5.0	.2872119	
14	4 22 29.41	21 27 0.7	.2929878	18 50.0	64 32 8.1	0 7 4.4	.2872078	
15	4 22 35.64	21 27 15.4	.2926255	18 46.1	64 32 49.7	0 7 3.9	.2872037	
16	4 22 41.67	21 27 29.6	.2922613	18 42.3	64 33 31.3	0 7 3.3	.2871996	
17	4 22 47.51	21 27 43.3	.2918951	18 38.5	64 34 13.0	0 7 2.8	.2871955	
18	4 22 53.15	21 27 56.6	.2915272	18 34.6	64 34 54.6	0 7 2.2	.2871914	
19	4 22 58.59	21 28 9.4	.2911576	18 30.8	64 35 36.2	0 7 1.7	.2871873	
20	4 23 3.82	21 28 21.7	.2907864	18 26.9	64 36 17.8	0 7 1.1	.2871832	
21	4 23 8.86	21 28 33.5	.2904137	18 23.1	64 36 59.4	0 7 0.5	.2871791	
22	4 23 13.69	21 28 44.9	.2900395	18 19.2	64 37 41.0	0 7 0.0	.2871750	
23	4 23 18.32	21 28 55.8	.2896640	18 15.4	64 38 22.6	0 6 59.4	.2871709	
24	4 23 22.74	21 29 6.2	.2892874	18 11.5	64 39 4.2	0 6 58.9	.2871667	
25	4 23 26.96	21 29 16.1	.2889096	18 7.6	64 39 45.8	0 6 58.3	.2871626	
26	4 23 30.96	21 29 25.5	.2885308	18 3.8	64 40 27.4	0 6 57.8	.2871585	
27	4 23 34.75	21 29 34.5	.2881511	17 59.9	64 41 9.0	0 6 57.2	.2871544	
28	4 23 38.33	21 29 42.9	.2877706	17 56.0	64 41 50.7	0 6 56.6	.2871503	
29	4 23 41.69	21 29 50.8	.2873894	17 52.1	64 42 32.3	0 6 56.1	.2871462	
30	4 23 44.84	21 29 58.3	.2870077	17 48.3	64 43 13.9	0 6 55.5	.2871421	
31	4 23 47.78	21 30 5.2	.2866255	17 44.4	64 43 55.5	0 6 55.0	.2871380	
Sept. 1	4 23 50.50	21 30 11.7	.2862429	17 40.5	64 44 37.1	0 6 54.4	.2871339	
2	4 23 53.00	21 30 17.6	.2858601	17 36.6	64 45 18.7	0 6 53.9	.2871298	
3	4 23 55.29	21 30 23.1	.2854772	17 32.7	64 46 0.3	0 6 53.3	.2871256	
4	4 23 57.36	21 30 28.1	.2850943	17 28.8	64 46 41.9	0 6 52.7	.2871215	

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	<i>h m s</i>	<i>+ s</i>	<i>s</i>	<i>North, ° ' "</i>	<i>+ "</i>	<i>"</i>	<i>"</i>
July 25	4 19 54.45	+ 0.40	0.14	21 20 51.1	+ 1.0	1.9	0.4
26	4 20 4.09	0.40	0.14	21 21 14.3	1.0	1.9	0.4
27	4 20 13.56	0.39	0.14	21 21 37.1	0.9	1.9	0.4
28	4 20 22.87	0.38	0.14	21 21 59.5	0.9	1.9	0.4
29	4 20 32.02	0.38	0.14	21 22 21.5	0.9	1.9	0.4
30	4 20 41.00	0.37	0.14	21 22 43.0	0.9	1.9	0.4
31	4 20 49.81	0.36	0.14	21 23 4.1	0.9	1.9	0.4
Aug. 1	4 20 58.45	0.36	0.14	21 23 24.6	0.8	1.9	0.4
2	4 21 6.91	0.35	0.14	21 23 44.8	0.8	1.9	0.4
3	4 21 15.20	0.34	0.14	21 24 4.6	0.8	1.9	0.4
4	4 21 23.30	0.33	0.14	21 24 23.9	0.8	1.9	0.4
5	4 21 31.23	0.33	0.14	21 24 42.7	0.8	1.9	0.4
6	4 21 38.98	0.32	0.14	21 25 1.2	0.8	1.9	0.4
7	4 21 46.55	0.31	0.14	21 25 19.2	0.7	1.9	0.4
8	4 21 53.93	0.30	0.14	21 25 36.7	0.7	1.9	0.4
9	4 22 1.13	0.30	0.14	21 25 53.8	0.7	1.9	0.4
10	4 22 8.15	0.29	0.14	21 26 10.4	0.7	1.9	0.4
11	4 22 14.98	0.28	0.14	21 26 26.6	0.7	1.9	0.4
12	4 22 21.61	0.27	0.14	21 26 42.3	0.6	1.9	0.4
13	4 22 28.06	0.26	0.14	21 26 57.5	0.6	1.9	0.4
14	4 22 34.31	0.26	0.14	21 27 12.2	0.6	1.9	0.4
15	4 22 40.37	0.25	0.14	21 27 26.5	0.6	1.9	0.4
16	4 22 46.24	0.24	0.14	21 27 40.4	0.6	1.9	0.4
17	4 22 51.91	0.23	0.14	21 27 53.7	0.5	1.9	0.4
18	4 22 57.37	0.22	0.14	21 28 6.6	0.5	1.9	0.4
19	4 23 2.64	0.22	0.14	21 28 19.0	0.5	1.9	0.4
20	4 23 7.71	0.21	0.14	21 28 30.9	0.5	1.9	0.4
21	4 23 12.58	0.20	0.14	21 28 42.3	0.5	1.9	0.4
22	4 23 17.24	0.19	0.14	21 28 53.2	0.4	1.9	0.4
23	4 23 21.70	0.18	0.14	21 29 3.7	0.4	1.9	0.4
24	4 23 25.96	0.17	0.14	21 29 13.7	0.4	1.9	0.4
25	4 23 30.00	0.16	0.14	21 29 23.3	0.4	1.9	0.4
26	4 23 33.84	0.15	0.14	21 29 32.3	0.4	1.9	0.4
27	4 23 37.46	0.14	0.14	21 29 40.9	0.3	1.9	0.4
28	4 23 40.87	0.14	0.14	21 29 48.9	0.3	1.9	0.4
29	4 23 44.06	0.13	0.14	21 29 56.4	0.3	1.9	0.4
30	4 23 47.04	0.12	0.14	21 30 3.5	0.3	1.9	0.4
31	4 23 49.81	0.11	0.14	21 30 10.1	0.3	1.9	0.4
Sept. 1	4 23 52.37	0.10	0.14	21 30 16.1	0.2	1.9	0.4
2	4 23 54.70	0.09	0.14	21 30 21.7	0.2	1.9	0.4
3	4 23 56.83	0.08	0.14	21 30 26.8	0.2	1.9	0.4
4	4 23 58.74	+ 0.08	0.14	21 30 31.4	+ 0.2	1.9	0.4

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.				
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.		
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.		
Sept.	4	h m s 4 23 57.36	North. ° ' " 21 30 28.1	I 2850943	h m 17 28.8	° ' " 64 46 41.9	South. ° ' " 0 6 52.7	I 2871215	
	5	4 23 59.22	21 30 32.5	2847116	17 24.9	64 47 23.5	0 6 52.2	2871174	
	6	4 24 0.86	21 30 36.5	2843291	17 21.0	64 48 5.1	0 6 51.6	2871132	
	7	4 24 2.28	21 30 39.9	2839469	17 17.1	64 48 46.7	0 6 51.1	2871091	
	8	4 24 3.49	21 30 42.9	2835651	17 13.1	64 49 28.3	0 6 50.5	2871050	
	9	4 24 4.48	21 30 45.4	2831839	17 9.2	64 50 9.9	0 6 49.9	2871009	
	10	4 24 5.25	21 30 47.4	2828033	17 5.3	64 50 51.5	0 6 49.4	2870968	
	11	4 24 5.81	21 30 48.9	2824235	17 1.4	64 51 33.1	0 6 48.8	2870926	
	12	4 24 6.15	21 30 49.9	2820445	16 57.5	64 52 14.7	0 6 48.3	2870885	
	13	4 24 6.27	21 30 50.4	2816664	16 53.5	64 52 56.4	0 6 47.7	2870844	
	14	4 24 6.18	21 30 50.4	2812895	16 49.6	64 53 38.0	0 6 47.1	2870803	
	15	4 24 5.87	21 30 49.9	2809137	16 45.7	64 54 19.6	0 6 46.6	2870762	
	16	4 24 5.34	21 30 48.9	2805391	16 41.7	64 55 1.2	0 6 46.0	2870721	
	17	4 24 4.60	21 30 47.4	2801660	16 37.8	64 55 42.8	0 6 45.5	2870680	
	18	4 24 3.64	21 30 45.4	2797943	16 33.8	64 56 24.4	0 6 44.9	2870638	
	19	4 24 2.46	21 30 42.9	2794242	16 29.9	64 57 6.0	0 6 44.3	2870597	
	20	4 24 1.06	21 30 40.0	2790558	16 25.9	64 57 47.6	0 6 43.8	2870556	
	21	4 23 59.45	21 30 36.5	2786893	16 21.9	64 58 29.2	0 6 43.2	2870515	
	22	4 23 57.62	21 30 32.5	2783248	16 18.0	64 59 10.8	0 6 42.7	2870474	
	23	4 23 55.58	21 30 28.1	2779624	16 14.0	64 59 52.5	0 6 42.1	2870432	
	24	4 23 53.33	21 30 23.1	2776022	16 10.0	65 0 34.1	0 6 41.5	2870391	
	25	4 23 50.86	21 30 17.6	2772443	16 6.1	65 1 15.7	0 6 41.0	2870350	
	26	4 23 48.18	21 30 11.7	2768889	16 2.1	65 1 57.3	0 6 40.4	2870309	
	27	4 23 45.28	21 30 5.3	2765361	15 58.1	65 2 38.9	0 6 39.9	2870268	
	28	4 23 42.18	21 29 58.4	2761860	15 54.1	65 3 20.5	0 6 39.3	2870226	
	29	4 23 38.86	21 29 51.1	2758388	15 50.1	65 4 2.1	0 6 38.7	2870185	
	30	4 23 35.34	21 29 43.2	2754945	15 46.1	65 4 43.8	0 6 38.2	2870144	
	Oct.	1	4 23 31.61	21 29 34.9	2751532	15 42.1	65 5 25.4	0 6 37.6	2870103
		2	4 23 27.68	21 29 26.1	2748152	15 38.1	65 6 7.0	0 6 37.1	2870062
		3	4 23 23.55	21 29 16.9	2744805	15 34.1	65 6 48.6	0 6 36.5	2870020
		4	4 23 19.22	21 29 7.2	2741493	15 30.1	65 7 30.2	0 6 35.9	2869979
5		4 23 14.68	21 28 57.0	2738216	15 26.1	65 8 11.8	0 6 35.4	2869938	
6		4 23 9.95	21 28 46.4	2734976	15 22.1	65 8 53.5	0 6 34.8	2869896	
7		4 23 5.03	21 28 35.3	2731773	15 18.1	65 9 35.1	0 6 34.3	2869855	
8		4 22 59.92	21 28 23.7	2728610	15 14.1	65 10 16.7	0 6 33.7	2869814	
9		4 22 54.61	21 28 11.7	2725486	15 10.0	65 10 58.3	0 6 33.1	2869773	
10		4 22 49.12	21 27 59.3	2722402	15 6.0	65 11 40.0	0 6 32.6	2869732	
11		4 22 43.44	21 27 46.4	2719360	15 2.0	65 12 21.6	0 6 32.0	2869690	
12		4 22 37.57	21 27 33.0	2716361	14 58.0	65 13 3.2	0 6 31.5	2869649	
13		4 22 31.53	21 27 19.3	2713405	14 53.9	65 13 44.8	0 6 30.9	2869608	
14		4 22 25.30	21 27 5.1	2710494	14 49.9	65 14 26.5	0 6 30.3	2869566	
15		4 22 18.90	21 26 50.5	2707629	14 45.9	65 15 8.1	0 6 29.8	2869525	

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	<i>h m s</i>	<i>+ s</i>	<i>s</i>	<i>North.</i> <i>° ' "</i>	<i>+ "</i>	<i>"</i>	<i>"</i>
Sept. 4	4 23 58.74	+ 0.08	0.14	21 30 31.4	+ 0.2	1.9	0.4
5	4 24 0.43	0.07	0.14	21 30 35.5	0.2	1.9	0.4
6	4 24 1.91	0.06	0.14	21 30 39.1	0.1	1.9	0.4
7	4 24 3.18	0.05	0.14	21 30 42.1	0.1	1.9	0.4
8	4 24 4.23	0.04	0.14	21 30 44.8	0.1	1.9	0.4
9	4 24 5.06	0.03	0.14	21 30 46.9	0.1	1.9	0.4
10	4 24 5.67	0.02	0.14	21 30 48.5	+ 0.1	1.9	0.4
11	4 24 6.08	+ 0.01	0.14	21 30 49.6	0.0	1.9	0.4
12	4 24 6.26	0.00	0.14	21 30 50.3	0.0	1.9	0.4
13	4 24 6.23	- 0.01	0.14	21 30 50.4	0.0	1.9	0.4
14	4 24 5.98	0.02	0.14	21 30 50.1	0.0	1.9	0.4
15	4 24 5.53	0.02	0.15	21 30 49.2	0.0	2.0	0.4
16	4 24 4.85	0.03	0.15	21 30 47.9	- 0.1	2.0	0.4
17	4 24 3.96	0.04	0.15	21 30 46.1	0.1	2.0	0.5
18	4 24 2.85	0.05	0.15	21 30 43.8	0.1	2.0	0.5
19	4 24 1.52	0.06	0.15	21 30 41.0	0.1	2.0	0.5
20	4 23 59.98	0.07	0.15	21 30 37.6	0.1	2.0	0.5
21	4 23 58.23	0.08	0.15	21 30 33.8	0.2	2.0	0.5
22	4 23 56.26	0.09	0.15	21 30 29.5	0.2	2.0	0.5
23	4 23 54.08	0.10	0.15	21 30 24.7	0.2	2.0	0.5
24	4 23 51.69	0.10	0.15	21 30 19.5	0.2	2.0	0.5
25	4 23 49.08	0.11	0.15	21 30 13.7	0.3	2.0	0.5
26	4 23 46.27	0.12	0.15	21 30 7.5	0.3	2.0	0.5
27	4 23 43.24	0.13	0.15	21 30 0.8	0.3	2.0	0.5
28	4 23 40.00	0.14	0.15	21 29 53.6	0.3	2.0	0.5
29	4 23 36.56	0.15	0.15	21 29 46.0	0.3	2.0	0.5
30	4 23 32.91	0.16	0.15	21 29 37.8	0.4	2.0	0.5
Oct. 1	4 23 29.06	0.17	0.15	21 29 29.2	0.4	2.0	0.5
2	4 23 25.01	0.17	0.15	21 29 20.2	0.4	2.0	0.5
3	4 23 20.76	0.18	0.15	21 29 10.7	0.4	2.0	0.5
4	4 23 16.31	0.19	0.15	21 29 0.6	0.4	2.0	0.5
5	4 23 11.66	0.20	0.15	21 28 50.2	0.4	2.0	0.5
6	4 23 6.82	0.21	0.15	21 28 39.3	0.5	2.0	0.5
7	4 23 1.79	0.21	0.15	21 28 27.9	0.5	2.0	0.5
8	4 22 56.57	0.22	0.15	21 28 16.1	0.5	2.0	0.5
9	4 22 51.16	0.23	0.15	21 28 3.8	0.5	2.0	0.5
10	4 22 45.56	0.24	0.15	21 27 51.2	0.5	2.0	0.5
11	4 22 39.78	0.24	0.15	21 27 38.1	0.6	2.0	0.5
12	4 22 33.82	0.25	0.15	21 27 24.5	0.6	2.0	0.5
13	4 22 27.68	0.26	0.15	21 27 10.5	0.6	2.0	0.5
14	4 22 21.36	0.27	0.15	21 26 56.1	0.6	2.0	0.5
15	4 22 14.88	- 0.28	0.15	21 26 41.3	- 0.6	2.0	0.5

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>I</i>	<i>h m</i>	<i>° ' "</i>	<i>South. ° ' "</i>	<i>I</i>
Oct. 15	4 22 18.90	21 26 50.5	.2707629	14 45.9	65 15 8.10	6 29.8	.2869525
16	4 22 12.32	21 26 35.5	.2704811	14 41.8	65 15 49.80	6 29.2	.2869484
17	4 22 5.57	21 26 20.0	.2702040	14 37.8	65 16 31.40	6 28.7	.2869443
18	4 21 58.65	21 26 4.2	.2699319	14 33.8	65 17 13.00	6 28.1	.2869401
19	4 21 51.57	21 25 47.9	.2696648	14 29.7	65 17 54.70	6 27.5	.2869360
20	4 21 44.31	21 25 31.3	.2694028	14 25.6	65 18 36.30	6 27.0	.2869319
21	4 21 36.90	21 25 14.2	.2691460	14 21.6	65 19 18.00	6 26.4	.2869277
22	4 21 29.32	21 24 56.7	.2688946	14 17.5	65 19 59.60	6 25.9	.2869236
23	4 21 21.59	21 24 38.9	.2686486	14 13.4	65 20 41.20	6 25.3	.2869195
24	4 21 13.70	21 24 20.7	.2684081	14 9.4	65 21 22.90	6 24.7	.2869154
25	4 21 5.67	21 24 2.1	.2681732	14 5.3	65 22 4.60	6 24.2	.2869112
26	4 20 57.48	21 23 43.1	.2679441	14 1.2	65 22 46.20	6 23.6	.2869071
27	4 20 49.16	21 23 23.8	.2677208	13 57.2	65 23 27.90	6 23.1	.2869030
28	4 20 40.70	21 23 4.2	.2675034	13 53.1	65 24 9.50	6 22.5	.2868989
29	4 20 32.10	21 22 44.2	.2672919	13 49.0	65 24 51.20	6 21.9	.2868947
30	4 20 23.37	21 22 23.9	.2670866	13 45.0	65 25 32.80	6 21.4	.2868906
31	4 20 14.52	21 22 3.2	.2668874	13 40.9	65 26 14.50	6 20.8	.2868865
Nov. 1	4 20 5.54	21 21 42.3	.2666944	13 36.8	65 26 56.10	6 20.3	.2868823
2	4 19 56.45	21 21 21.0	.2665078	13 32.7	65 27 37.80	6 19.7	.2868782
3	4 19 47.24	21 20 59.4	.2663276	13 28.6	65 28 19.50	6 19.1	.2868741
4	4 19 37.92	21 20 37.6	.2661538	13 24.5	65 29 1.20	6 18.6	.2868699
5	4 19 28.50	21 20 15.4	.2659866	13 20.5	65 29 42.90	6 18.0	.2868658
6	4 19 18.97	21 19 53.0	.2658260	13 16.4	65 30 24.50	6 17.5	.2868616
7	4 19 9.34	21 19 30.3	.2656720	13 12.3	65 31 6.20	6 16.9	.2868575
8	4 18 59.62	21 19 7.3	.2655248	13 8.2	65 31 47.90	6 16.3	.2868534
9	4 18 49.81	21 18 44.1	.2653842	13 4.1	65 32 29.60	6 15.8	.2868492
10	4 18 39.91	21 18 20.6	.2652504	13 0.0	65 33 11.30	6 15.2	.2868451
11	4 18 29.92	21 17 56.9	.2651234	12 55.9	65 33 53.00	6 14.7	.2868409
12	4 18 19.86	21 17 33.0	.2650034	12 51.8	65 34 34.60	6 14.1	.2868368
13	4 18 9.72	21 17 8.9	.2648902	12 47.7	65 35 16.30	6 13.5	.2868327
14	4 17 59.52	21 16 44.6	.2647841	12 43.6	65 35 58.10	6 13.0	.2868285
15	4 17 49.25	21 16 20.1	.2646850	12 39.5	65 36 39.80	6 12.4	.2868244
16	4 17 38.92	21 15 55.4	.2645931	12 35.4	65 37 21.50	6 11.9	.2868203
17	4 17 28.53	21 15 30.5	.2645082	12 31.3	65 38 3.20	6 11.3	.2868161
18	4 17 18.08	21 15 5.5	.2644306	12 27.2	65 38 44.90	6 10.7	.2868120
19	4 17 7.59	21 14 40.3	.2643602	12 23.0	65 39 26.60	6 10.2	.2868078
20	4 16 57.06	21 14 15.0	.2642971	12 18.9	65 40 8.30	6 9.6	.2868037
21	4 16 46.49	21 13 49.5	.2642413	12 14.8	65 40 50.00	6 9.1	.2867996
22	4 16 35.88	21 13 23.9	.2641929	12 10.7	65 41 31.70	6 8.5	.2867954
23	4 16 25.25	21 12 58.2	.2641518	12 6.6	65 42 13.40	6 7.9	.2867912
24	4 16 14.59	21 12 32.4	.2641181	12 2.5	65 42 55.10	6 7.4	.2867871
25	4 16 3.91	21 12 6.5	.2640918	11 58.4	65 43 36.80	6 6.8	.2867829

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	<i>h m s</i>	<i>° ' "</i>	<i>° ' "</i>	<i>North.</i> <i>° ' "</i>	<i>° ' "</i>	<i>"</i>	<i>"</i>
Oct. 15	4 22 14.88	— 0.28	0.15	21 26 41.3	— 0.6	2.0	0.5
16	4 22 8.21	0.28	0.15	21 26 26.0	0.6	2.0	0.5
17	4 22 1.38	0.29	0.15	21 26 10.4	0.7	2.0	0.5
18	4 21 54.37	0.30	0.15	21 25 54.4	0.7	2.0	0.5
19	4 21 47.21	0.30	0.15	21 25 37.9	0.7	2.0	0.5
20	4 21 39.88	0.31	0.15	21 25 21.1	0.7	2.0	0.5
21	4 21 32.39	0.32	0.15	21 25 3.8	0.7	2.0	0.5
22	4 21 24.74	0.33	0.15	21 24 46.2	0.7	2.0	0.5
23	4 21 16.93	0.33	0.15	21 24 28.1	0.8	2.0	0.5
24	4 21 8.98	0.34	0.15	21 24 9.7	0.8	2.0	0.5
25	4 21 0.88	0.34	0.15	21 23 51.0	0.8	2.0	0.5
26	4 20 52.64	0.35	0.15	21 23 31.9	0.8	2.0	0.5
27	4 20 44.26	0.35	0.15	21 23 12.4	0.8	2.0	0.5
28	4 20 35.74	0.36	0.15	21 22 52.7	0.8	2.0	0.5
29	4 20 27.09	0.36	0.15	21 22 32.5	0.8	2.0	0.5
30	4 20 18.32	0.37	0.15	21 22 12.1	0.9	2.0	0.5
31	4 20 9.42	0.37	0.15	21 21 51.3	0.9	2.0	0.5
Nov. 1	4 20 0.40	0.38	0.15	21 21 30.3	0.9	2.0	0.5
2	4 19 51.27	0.38	0.15	21 21 8.9	0.9	2.0	0.5
3	4 19 42.02	0.39	0.15	21 20 47.2	0.9	2.0	0.5
4	4 19 32.67	0.39	0.15	21 20 25.2	0.9	2.0	0.5
5	4 19 23.21	0.40	0.15	21 20 3.0	0.9	2.0	0.5
6	4 19 13.66	0.40	0.15	21 19 40.5	0.9	2.0	0.5
7	4 19 4.01	0.40	0.15	21 19 17.7	1.0	2.0	0.5
8	4 18 54.26	0.41	0.15	21 18 54.6	1.0	2.0	0.5
9	4 18 44.42	0.41	0.15	21 18 31.3	1.0	2.0	0.5
10	4 18 34.51	0.42	0.15	21 18 7.8	1.0	2.0	0.5
11	4 18 24.51	0.42	0.15	21 17 44.1	1.0	2.0	0.5
12	4 18 14.43	0.42	0.15	21 17 20.1	1.0	2.0	0.5
13	4 18 4.29	0.43	0.15	21 16 56.0	1.0	2.0	0.5
14	4 17 54.08	0.43	0.15	21 16 31.6	1.0	2.0	0.5
15	4 17 43.81	0.43	0.15	21 16 7.1	1.0	2.0	0.5
16	4 17 33.47	0.43	0.15	21 15 42.4	1.0	2.0	0.5
17	4 17 23.08	0.43	0.15	21 15 17.5	1.0	2.0	0.5
18	4 17 12.64	0.44	0.15	21 14 52.5	1.0	2.0	0.5
19	4 17 2.16	0.44	0.15	21 14 27.3	1.1	2.0	0.5
20	4 16 51.64	0.44	0.15	21 14 2.0	1.1	2.0	0.5
21	4 16 41.08	0.44	0.15	21 13 36.5	1.1	2.0	0.5
22	4 16 30.49	0.44	0.15	21 13 10.9	1.1	2.0	0.5
23	4 16 19.87	0.44	0.15	21 12 45.2	1.1	2.0	0.5
24	4 16 9.23	0.44	0.15	21 12 19.4	1.1	2.0	0.5
25	4 15 58.58	— 0.44	0.15	21 11 53.5	— 1.1	2.0	0.5

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	<i>h m s</i>	<i>North. ° ' "</i>	<i>I</i>	<i>h m</i>	<i>° ' "</i>	<i>South. ° ' "</i>	<i>I</i>
Nov. 25	4 16 3.91	21 12 6.5	2640918	11 58.4	65 43 36.8	0 6 6.8	2867829
26	4 15 53.22	21 11 40.6	2640730	11 54.3	65 44 18.6	0 6 6.3	2867788
27	4 15 42.52	21 11 14.6	2640616	11 50.2	65 45 0.3	0 6 5.7	2867746
28	4 15 31.81	21 10 48.6	2640576	11 46.1	65 45 42.0	0 6 5.1	2867705
29	4 15 21.10	21 10 22.5	2640610	11 42.0	65 46 23.7	0 6 4.6	2867663
30	4 15 10.40	21 9 56.4	2640718	11 37.9	65 47 5.5	0 6 4.0	2867622
Dec. 1	4 14 59.72	21 9 30.3	2640901	11 33.7	65 47 47.2	0 6 3.5	2867580
2	4 14 49.05	21 9 4.2	2641159	11 29.6	65 48 28.9	0 6 2.9	2867539
3	4 14 38.40	21 8 38.1	2641490	11 25.5	65 49 10.6	0 6 2.3	2867498
4	4 14 27.79	21 8 12.0	2641895	11 21.4	65 49 52.4	0 6 1.8	2867456
5	4 14 17.20	21 7 46.0	2642373	11 17.3	65 50 34.1	0 6 1.2	2867415
6	4 14 6.64	21 7 20.0	2642925	11 13.2	65 51 15.9	0 6 0.7	2867373
7	4 13 56.13	21 6 54.1	2643551	11 9.1	65 51 57.6	0 6 0.1	2867332
8	4 13 45.66	21 6 28.3	2644249	11 5.0	65 52 39.4	0 5 59.5	2867290
9	4 13 35.24	21 6 2.5	2645019	11 0.9	65 53 21.1	0 5 59.0	2867249
10	4 13 24.87	21 5 36.9	2645862	10 56.8	65 54 2.9	0 5 58.4	2867207
11	4 13 14.56	21 5 11.4	2646776	10 52.7	65 54 44.6	0 5 57.9	2867166
12	4 13 4.31	21 4 45.9	2647761	10 48.6	65 55 26.3	0 5 57.3	2867124
13	4 12 54.13	21 4 20.6	2648818	10 44.5	65 56 8.1	0 5 56.7	2867083
14	4 12 44.01	21 3 55.5	2649946	10 40.4	65 56 49.9	0 5 56.2	2867041
15	4 12 33.97	21 3 30.5	2651144	10 36.3	65 57 31.6	0 5 55.6	2867000
16	4 12 24.00	21 3 5.7	2652412	10 32.2	65 58 13.4	0 5 55.1	2866958
17	4 12 14.12	21 2 41.1	2653750	10 28.1	65 58 55.1	0 5 54.5	2866917
18	4 12 4.32	21 2 16.7	2655157	10 24.0	65 59 36.9	0 5 53.9	2866875
19	4 11 54.62	21 1 52.4	2656632	10 19.9	66 0 18.6	0 5 53.4	2866834
20	4 11 45.02	21 1 28.4	2658176	10 15.8	66 1 0.4	0 5 52.8	2866792
21	4 11 35.52	21 1 4.6	2659787	10 11.7	66 1 42.1	0 5 52.3	2866751
22	4 11 26.13	21 0 41.0	2661465	10 7.6	66 2 23.9	0 5 51.7	2866709
23	4 11 16.84	21 0 17.7	2663210	10 3.6	66 3 5.6	0 5 51.1	2866668
24	4 11 7.67	20 59 54.6	2665020	9 59.5	66 3 47.4	0 5 50.6	2866626
25	4 10 58.63	20 59 31.9	2666895	9 55.4	66 4 29.2	0 5 50.0	2866585
26	4 10 49.70	20 59 9.4	2668835	9 51.3	66 5 10.9	0 5 49.5	2866543
27	4 10 40.90	20 58 47.3	2670837	9 47.2	66 5 52.7	0 5 48.9	2866502
28	4 10 32.24	20 58 25.4	2672902	9 43.2	66 6 34.4	0 5 48.3	2866460
29	4 10 23.71	20 58 4.0	2675029	9 39.1	66 7 16.2	0 5 47.8	2866419
30	4 10 15.32	20 57 42.9	2677216	9 35.0	66 7 58.0	0 5 47.2	2866377
31	4 10 7.07	20 57 22.2	2679463	9 31.0	66 8 39.7	0 5 46.7	2866336
32	4 9 58.96	20 57 1.9	2681769	9 26.9	66 9 21.5	0 5 46.1	2866294

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
				<i>North.</i>			
				<i>° ' "</i>	<i>"</i>	<i>"</i>	<i>"</i>
Nov. 25	h m s 4 15 58.58	— 0.44	0.15	21 11 53.5	— 1.1	2.0	0.5
26	4 15 47.91	0.44	0.15	21 11 27.7	1.1	2.0	0.5
27	4 15 37.24	0.44	0.15	21 11 1.8	1.1	2.0	0.5
28	4 15 26.56	0.44	0.15	21 10 35.8	1.1	2.0	0.5
29	4 15 15.89	0.44	0.15	21 10 9.8	1.1	2.0	0.5
30	4 15 5.23	0.44	0.15	21 9 43.8	1.1	2.0	0.5
Dec. 1	4 14 54.58	0.44	0.15	21 9 17.7	1.1	2.0	0.5
2	4 14 43.95	0.44	0.15	21 8 51.7	1.1	2.0	0.5
3	4 14 33.35	0.44	0.14	21 8 25.7	1.1	2.0	0.5
4	4 14 22.78	0.44	0.14	21 7 59.7	1.1	2.0	0.5
5	4 14 12.24	0.44	0.14	21 7 33.8	1.1	2.0	0.5
6	4 14 1.73	0.44	0.14	21 7 7.9	1.1	2.0	0.5
7	4 13 51.27	0.44	0.14	21 6 42.1	1.1	2.0	0.5
8	4 13 40.85	0.43	0.14	21 6 16.4	1.1	2.0	0.5
9	4 13 30.48	0.43	0.14	21 5 50.8	1.1	2.0	0.5
10	4 13 20.17	0.43	0.14	21 5 25.2	1.1	2.0	0.5
11	4 13 9.91	0.43	0.14	21 4 59.8	1.1	2.0	0.5
12	4 12 59.72	0.42	0.14	21 4 34.5	1.1	2.0	0.5
13	4 12 49.60	0.42	0.14	21 4 9.4	1.0	2.0	0.5
14	4 12 39.54	0.42	0.14	21 3 44.3	1.0	2.0	0.5
15	4 12 29.56	0.41	0.14	21 3 19.5	1.0	2.0	0.5
16	4 12 19.66	0.41	0.14	21 2 54.8	1.0	2.0	0.5
17	4 12 9.84	0.41	0.14	21 2 30.4	1.0	2.0	0.5
18	4 12 0.12	0.40	0.14	21 2 6.1	1.0	2.0	0.5
19	4 11 50.49	0.40	0.14	21 1 42.0	1.0	2.0	0.5
20	4 11 40.95	0.40	0.14	21 1 18.1	1.0	2.0	0.5
21	4 11 31.53	0.39	0.14	21 0 54.5	1.0	2.0	0.5
22	4 11 22.21	0.39	0.14	21 0 31.1	1.0	2.0	0.5
23	4 11 13.00	0.38	0.14	21 0 7.9	1.0	2.0	0.5
24	4 11 3.91	0.38	0.14	20 59 45.0	0.9	2.0	0.5
25	4 10 54.93	0.37	0.14	20 59 22.5	0.9	2.0	0.5
26	4 10 46.09	0.37	0.14	20 59 0.2	0.9	2.0	0.5
27	4 10 37.37	0.36	0.14	20 58 38.2	0.9	2.0	0.5
28	4 10 28.78	0.36	0.14	20 58 16.6	0.9	2.0	0.5
29	4 10 20.32	0.35	0.14	20 57 55.4	0.9	2.0	0.5
30	4 10 12.01	0.34	0.14	20 57 34.5	0.9	2.0	0.5
31	4 10 3.84	0.34	0.14	20 57 14.0	0.8	2.0	0.5
32	4 9 55.82	— 0.33	0.14	20 56 53.9	— 0.8	2.0	0.5

MEAN PLACES FOR JANUARY 0^d.385. (See page 363.)

Star's Name.	Mag.	Right Ascension.	Annual Var.	Declination.	Annual Var.
α Andromedæ -	2	^h 0 ^m 1 ^s 6.299	+ 3.0844	N.28 18 42.71	+ 19.901
γ Pegasi (<i>Algenib</i>)	3.2	0 5 58.662	3.0801	N.14 23 58.08	20.030
β Hydri - - -	3	0 18 16.789	3.2900	S.78 2 57.15	20.252
12 Ceti - - -	6	0 22 50.616	3.0592	S. 4 44 12.86	19.946
α Cassiopeæ - -	var.	0 32 31.744	3.3563	N.55 45 48.40	19.814
β Ceti - - -	2	0 36 30.515	3.0128	S.18 45 40.92	19.822
ϵ Piscium - - -	4	0 55 37.698	3.1096	N. 7 47 48.39	19.468
α Urs. Min. (<i>Polaris</i>)	2	1 7 43.901	18.7114	N.88 33 28.16	19.185
θ Ceti - - -	3	1 16 58.508	2.9961	S. 8 54 44.01	18.714
η Piscium - - -	4.3	1 23 56.530	3.1969	N.14 37 3.37	18.722
α Eridani (<i>Achernar</i>)	1	1 32 27.434	2.2363	S.57 57 14.21	18.433
ν Piscium - - -	5.4	1 34 5.754	3.1129	N. 4 46 21.78	18.345
β Arietis - - -	3.2	1 46 51.413	3.2942	N.20 7 1.51	17.803
α Arietis - - -	2	1 59 13.896	3.3642	N.22 47 37.23	17.251
67 Ceti - - -	6	2 9 57.077	2.9858	S. 7 4 25.94	16.783
ξ Ceti - - -	4	2 20 39.950	3.1789	N. 7 49 32.70	16.376
γ Ceti - - -	3.4	2 35 59.803	3.1003	N. 2 38 20.62	15.403
α Ceti - - -	2.3	2 54 54.645	3.1262	N. 3 32 1.99	14.381
δ Arietis - - -	4.5	3 3 34.309	3.4164	N.19 11 26.32	13.959
α Persei - - -	2	3 14 16.479	4.2427	N.49 21 19.72	13.220
γ Tauri - - -	3	3 39 6.479	3.5503	N.23 39 56.92	11.505
γ Eridani - - -	3	3 51 27.057	2.7941	S.13 54 44.75	10.550
δ Eridani - - -	4.5	4 4 59.068	2.9208	S. 7 12 28.71	9.723
ϵ Tauri - - -	4.3	4 20 23.212	3.4910	N.18 51 50.50	8.410
α Tauri (<i>Aldebaran</i>)	1	4 27 50.000	3.4341	N.16 13 20.00	7.673
ι Aurigæ - - -	3	4 47 28.980	3.8930	N.32 56 19.02	6.193
ϵ Leporis - - -	4.3	4 59 29.518	2.5354	S.22 33 48.01	5.163
α Aurigæ (<i>Capella</i>)	1	5 6 16.710	4.4199	N.45 50 58.47	4.225
β Orionis (<i>Rigel</i>)	1	5 7 45.735	2.8795	S. 8 22 4.50	4.509
γ Tauri - - -	2	5 17 22.832	3.7864	N.28 29 2.14	3.508
δ Orionis - - -	2	5 24 48.272	3.0636	S. 0 24 25.69	3.028
α Leporis - - -	3	5 26 30.752	2.6457	S.17 55 34.29	2.923
ι Orionis - - -	2	5 29 3.561	3.0411	S. 1 17 43.90	2.682
α Columbæ - - -	2	5 34 32.767	2.1775	S.34 9 4.39	2.222
α Orionis - - -	var.	5 47 32.320	3.2459	N. 7 22 36.96	1.084
ν Orionis - - -	5.4	5 59 31.301	3.4258	N.14 46 53.07	+ 0.021
μ Geminorum - -	3	6 14 25.787	3.6322	N.22 34 54.35	- 1.391
α Argus (<i>Canopus</i>)	1	6 20 49.450	1.3301	S.52 37 11.92	1.820
γ Geminorum - -	2.3	6 29 33.972	3.4663	N.16 30 56.60	2.597
51 (Hev.) Cephei -	5	6 33 6.778	30.4589	N.87 14 56.52	2.989
α Canis Maj. (<i>Sirius</i>)	1	6 38 56.186	2.6452	S.16 31 33.54	4.617
ι Canis Majoris -	2.1	6 53 5.090	2.3578	S.28 46 59.12	4.616
γ Canis Majoris -	4.5	6 57 22.785	2.7158	S.15 25 40.12	4.976
δ Geminorum - -	3.4	7 11 41.968	3.5921	N.22 14 17.02	6.190
α Geminor. (<i>Castor</i>)	2.1	7 25 35.884	3.8432	N.32 11 36.60	7.395
α Can. Min. (<i>Procyon</i>)	1	7 31 55.094	3.1451	N. 5 35 0.16	8.863
β Geminor. (<i>Pollux</i>)	1.2	7 36 40.962	3.6827	N.28 21 46.82	8.272
6 Cancri - - -	5	7 54 51.250	3.6958	N.28 11 10.31	9.702
15 Argus - - -	3	8 1 32.376	2.5546	S.23 54 0.94	10.079
γ Cancri - - -	6	8 24 32.969	3.4802	N.20 55 1.41	11.884
ϵ Hydræ - - -	3.4	8 39 18.406	+ 3.1845	N. 6 56 0.59	-12.885

MEAN PLACES FOR JANUARY $\alpha^{\circ} 385$. (See page 363.)

Star's Name.	Mag.	Right Ascension.	Annual Var.	Declination.	Annual Var.
		^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]
Ursæ Majoris - -	3	8 49 32.057	+ 4.1450	N.48 35 31.60	-13.796
83 Cancri - - -	6	9 11 6.316	3.3572	N.18 18 2.44	15.016
Argus - - -	2	9 13 18.928	1.6018	S.58 41 2.93	14.911
α Hydræ - - -	2	9 20 39.454	2.9487	S. 8 2 58.33	15.369
θ Ursæ Majoris - -	3	9 23 24.214	4.0580	N.52 19 2.32	16.115
ϵ Leonis - - -	3	9 37 50.462	3.4207	N.24 25 17.03	16.340
τ Leonis - - -	5	9 52 45.570	3.1773	N. 8 43 7.99	17.072
α Leonis (<i>Regulus</i>)	1.2	10 0 51.545	3.2033	N.12 39 16.81	17.398
γ Leonis - - -	2	10 12 11.632	3.3180	N.20 33 11.34	18.024
ρ Leonis - - -	4	10 25 23.057	3.1669	N.10 1 51.13	18.400
η Argus - - -	2	10 39 35.972	2.3070	S.58 56 36.51	18.743
ι Leonis - - -	5	10 41 50.555	3.1584	N.11 17 25.12	18.917
α Ursæ Majoris - -	2	10 54 59.699	3.7743	N.62 30 39.95	19.343
χ Leonis - - -	5	10 57 44.515	3.0988	N. 8 5 50.42	19.399
δ Leonis - - -	2.3	11 6 36.278	3.2039	N.21 17 43.77	19.659
δ Hydræ et Crateris	3.4	11 12 17.563	2.9943	S. 14 0 58.19	19.446
ν Leonis - - -	5.4	11 29 43.800	3.0690	S. 0 2 43.73	19.853
β Leonis - - -	2	11 41 51.864	3.0657	N.15 21 36.45	20.095
γ Ursæ Majoris - -	2.3	11 46 23.802	3.1942	N.54 28 43.09	20.025
ϵ Corvi - - -	3	12 2 52.677	3.0741	S.21 50 7.13	20.047
β Chamæleontis - -	5	12 10 9.321	3.3205	S.78 31 45.50	20.044
η Virginis - - -	3.4	12 12 41.531	3.0647	N. 0 7 2.27	20.058
α Crucis - - -	1	12 18 46.830	3.2577	S.62 18 58.89	19.937
β Corvi - - -	2.3	12 26 59.069	3.1300	S.22 37 0.00	19.984
γ Virginis - - -	3.2	12 34 31.005	3.0370	S. 0 40 33.24	19.875
12 Canum Venaticor.	3	12 49 25.500	2.8178	N.39 4 50.42	19.534
θ Virginis - - -	4.5	13 2 29.104	3.0981	S. 4 47 6.80	19.350
α Virginis (<i>Spica</i>)	1	13 17 46.087	3.1494	S.10 25 27.09	18.950
ζ Virginis - - -	3.4	13 27 30.661	3.0515	N. 0 7 35.56	18.546
η Ursæ Majoris - -	2	13 41 58.822	2.3739	N.50 1 5.53	18.125
ν Bootis - - -	3	13 47 58.232	2.8582	N.19 6 21.49	18.224
β Centauri - - -	1	13 53 54.532	4.1526	S.59 41 25.10	17.697
τ Virginis - - -	4	13 54 28.325	3.0469	N. 2 13 42.76	17.672
α Bootis (<i>Arcturus</i>)	1	14 9 13.826	2.7336	N.19 55 5.50	18.928
ρ Bootis - - -	4.3	14 25 45.193	2.5870	N.30 59 31.89	15.997
α Centauri - - -	1	14 30 3.979	4.0271	S.60 14 53.63	15.066
ϵ Bootis - - -	2.3	14 38 49.690	2.6194	N.27 40 13.88	15.424
α Libræ - - -	2.3	14 43 4.981	+ 3.3041	S.15 27 12.07	15.246
β Ursæ Minoris - -	2	14 51 9.663	- 0.2602	N.74 43 53.55	14.754
ψ Bootis - - -	4.5	14 58 24.303	+ 2.5703	N.27 29 58.61	14.276
β Libræ - - -	2	15 9 25.358	3.2176	S. 8 51 35.75	13.600
α Coronæ Borealis	2	15 28 43.076	2.5375	N.27 11 29.52	12.369
α Serpentis - - -	2.3	15 37 19.422	+ 2.9485	N. 6 52 19.06	11.636
ζ Ursæ Minoris - -	4.5	15 49 10.882	- 2.3113	N.78 13 34.84	10.832
β Scorpii - - -	2	15 57 14.559	+ 3.4759	S.19 24 57.71	10.254
δ Ophiuchi - - -	3	16 6 57.493	3.1353	S. 3 19 41.49	9.617
α Scorpii (<i>Antares</i>)	1.2	16 20 46.010	3.6651	S.26 6 55.04	8.442
η Draconis - - -	3.2	16 22 5.801	0.8215	N.61 50 3.40	8.229
α Trianguli Australis	2	16 33 46.515	6.2717	S.68 45 42.66	7.144
ζ Herculis - - -	3.2	16 35 58.276	2.2621	N.31 51 38.10	6.743
ϵ Ophiuchi - - -	3.4	16 50 59.767	+ 2.8335	N. 9 35 50.04	- 5.923

MEAN PLACES FOR JANUARY 0^d 385. (See page 363.)

Star's Name.	Mag.	Right Ascension.	Annual Var.	Declination.	Annual Var.
		^h ^m ^s		[°] ['] ["]	["]
α Ursæ Minoris -	4.5	17 0 33.743	- 6.4233	N.82 15 46.08	- 5.148
α Herculis -	-	17 8 13.085	+ 2.7318	N.14 33 14.76	4.447
θ Ophiuchi -	3.4	17 13 21.121	3.6756	S.24 51 15.24	4.037
β Draconis -	3.2	17 27 14.843	1.3502	N.52 24 25.93	2.853
α Ophiuchi -	2	17 28 23.362	2.7805	N.12 39 56.82	2.965
μ Herculis -	3.4	17 40 56.453	2.3422	N.27 48 20.18	2.400
σ Octantis -	6	17 46 18.469	109.1789	S.89 16 39.18	1.091
γ Draconis -	2.3	17 53 19.963	1.3921	N.51 30 24.83	- 0.622
μ^* Sagittarii -	4	18 5 19.798	+ 3.5844	S.21 5 30.13	+ 0.462
δ Ursæ Minoris -	4.5	18 17 49.765	- 19.3475	N.86 36 5.33	1.571
α Lyrae (<i>Vega</i>)	1	18 32 9.821	+ 2.0304	N.38 39 17.06	3.094
β Lyrae -	var.	18 44 52.381	2.2119	N.33 12 4.31	3.876
ζ Aquilæ -	3	18 58 55.638	2.7520	N.13 39 24.96	5.029
ω Aquilæ -	6.5	19 11 11.839	2.8140	N.11 20 38.28	6.150
δ Aquilæ -	3.4	19 18 23.254	3.0241	N. 2 50 12.63	6.828
λ Sagittarii -	5.4	19 28 7.247	3.6568	S.25 11 26.11	7.542
γ Aquilæ -	3	19 39 33.290	2.8516	N.10 16 21.12	8.446
α Aquilæ (<i>Altair</i>)	1.2	19 43 54.143	2.9275	N. 8 29 56.00	9.167
β Aquilæ -	4	19 48 23.138	+ 2.9466	N. 6 3 26.78	8.661
λ Ursæ Minoris -	5	20 4 50.508	- 56.0231	N.88 53 14.29	10.366
α^* Capricorni -	3.4	20 10 13.633	+ 3.3333	S.12 58 44.05	10.794
α Pavonis -	2	20 14 28.398	4.8019	S.57 10 55.75	11.076
ρ Capricorni -	5	20 20 48.694	3.4269	S.18 16 35.76	11.557
α Cygni -	2.1	20 36 37.488	2.0428	N.44 46 41.54	12.666
β Vulpeculæ -	5.6	20 48 33.063	2.5535	N.27 31 24.15	13.460
61 α Cygni -	5.6	21 0 34.541	2.6733	N.38 3 29.11	17.462
ζ Cygni -	3	21 6 56.127	2.5477	N.29 39 1.17	14.535
α Cephei -	3.2	21 15 12.697	1.4384	N.61 59 20.24	15.098
β Aquarii -	3	21 24 7.951	3.1633	S. 6 11 21.63	15.600
β Cephei -	3	21 26 49.566	0.8034	N.69 56 31.51	15.700
α Pegasi -	2.3	21 37 15.619	2.9481	N. 9 13 49.32	16.293
16 α Pegasi -	5.6	21 46 38.886	2.7256	N.25 15 47.25	16.749
α Aquarii -	3	21 58 32.366	3.0827	S. 1 0 12.15	17.293
α Grus -	2	21 59 19.757	3.8194	S.47 38 28.89	17.159
θ Aquarii -	4.5	22 9 23.426	3.1701	S. 8 29 1.57	17.733
η Aquarii -	4.3	22 28 6.560	3.0823	S. 0 50 34.78	18.410
ζ Pegasi -	3.4	22 34 25.739	2.9868	N.10 5 47.32	18.677
α Pis. Aus. (<i>Fomalhaut</i>)	1.2	22 49 51.012	3.3310	S.30 22 6.89	18.950
α Pegasi (<i>Markab</i>)	2	22 57 44.324	2.9826	N.14 26 50.69	19.299
γ Piscium -	4	23 9 51.357	3.1061	N. 2 30 45.12	19.563
κ Piscium -	5.4	23 19 42.264	3.0746	N. 0 29 3.28	19.627
ι Piscium -	4.5	23 32 41.938	3.0840	N. 4 51 44.37	19.463
γ Cephei -	3.4	23 33 35.487	2.3940	N.76 50 44.02	20.074
δ Sculptoris -	4.5	23 41 34.545	3.1337	S.28 54 34.50	19.922
ω Piscium -	4	23 52 4.347	+ 3.0771	N. 6 4 57.79	+ 19.915

FORMULÆ OF REDUCTION.

ACCORDING TO THE LATE PROFESSOR BESSEL.

1.—*Adopting the Notation of the British Association Catalogue and the Coefficients of Professor Peters (Numerus Constantis Nutationis, p. 75).*

$$A = -20''.4451 \cos \omega \cos \odot$$

$$B = -20''.4451 \sin \odot$$

$$C = t - 0''.02519 \sin 2 \odot - 0''.34240 \sin \mathcal{L} + 0''.00410 \sin 2 \mathcal{L} - 0''.00405 \sin 2 \mathcal{L}$$

$$D = -0''.5507 \cos 2 \odot - 9''.2236 \cos \mathcal{L} + 0''.0895 \cos 2 \mathcal{L} - 0''.0885 \cos 2 \mathcal{L}$$

$$a = \cos \alpha \sec \delta$$

$$b = \sin \alpha \sec \delta$$

$$c = 46''.0793 + 20''.0557 \sin \alpha \tan \delta$$

$$d = \cos \alpha \tan \delta$$

$$a' = \tan \omega \cos \delta - \sin \alpha \sin \delta$$

$$b' = \cos \alpha \sin \delta$$

$$c' = 20''.0557 \cos \alpha$$

$$d' = -\sin \alpha$$

Δc = the annual proper motion in Right Ascension, in *arc*.

$\Delta c'$ = the annual proper motion in Declination.

Where t denotes the time reckoned from the moment when the Sun's mean longitude was 280° (Jan. $0^d.385$) and expressed in fractional parts of a tropical year, \odot the Sun's and \mathcal{L} the Moon's true longitude, \mathcal{L} the mean longitude of the Moon's node, and ω the obliquity of the Ecliptic, each for the time t : α the mean Right Ascension, in *arc*, and δ the mean Declination for the beginning of the year. Then, for the time represented by t ,

$$\text{Apparent R.A., in arc,} = \alpha + Aa + Bb + Cc + Dd + t\Delta c.$$

$$\text{Apparent Dec.} \quad - \quad - \quad - \quad = \delta + Aa' + Bb' + Cc' + Dd' + t\Delta c'.$$

2.—*Using the same Notation and Coefficients, and assuming*

$$46''.0793 C = f \qquad B = h \cos H$$

$$20''.0557 C = g \cos G \qquad A = h \sin H$$

$$D = g \sin G \qquad A \tan \omega = i$$

$$\text{Apparent R.A., in arc,} = \alpha + f + t\Delta c \\ + g \sin (G + \alpha) \tan \delta + h \sin (H + \alpha) \sec \delta$$

$$\text{Apparent Dec.} \quad - \quad - \quad - \quad = \delta + i \cos \delta + t\Delta c' \\ + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta$$

CONSTANTS FOR FACILITATING THE REDUCTION OF STARS.

Month and Day.		At Greenwich Mean Midnight.					
		<i>f</i>	<i>g</i>	<i>G</i>	<i>h</i>	<i>H</i>	<i>i</i>
Jan.	1	+ 7 ^h 81	+ 8 ^h 32	294 8	+ 20 ^h 39	349 46	- 1 ^h 57
	6	8 ^h 69	8 ^h 50	296 25	20 ^h 32	345 3	2 ^h 27
	11	9 ^h 55	8 ^h 71	298 30	20 ^h 23	340 18	2 ^h 96
	16	10 ^h 38	8 ^h 94	300 22	20 ^h 12	335 30	3 ^h 62
	21	+ 11 ^h 18	+ 9 ^h 17	302 4	+ 19 ^h 99	330 40	- 4 ^h 25
Feb.	26	11 ^h 95	9 ^h 41	303 34	19 ^h 86	325 45	4 ^h 85
	31	12 ^h 69	9 ^h 65	304 54	19 ^h 72	320 47	5 ^h 41
	5	13 ^h 39	9 ^h 89	306 5	19 ^h 57	315 45	5 ^h 93
	10	+ 14 ^h 05	+ 10 ^h 12	307 9	+ 19 ^h 42	310 38	- 6 ^h 39
	15	14 ^h 68	10 ^h 35	308 7	19 ^h 28	305 28	6 ^h 81
Mar.	20	15 ^h 27	10 ^h 56	309 1	19 ^h 14	300 14	7 ^h 18
	25	15 ^h 84	10 ^h 76	309 51	19 ^h 03	294 56	7 ^h 49
	2	+ 16 ^h 38	+ 10 ^h 94	310 39	+ 18 ^h 93	289 35	- 7 ^h 74
	7	16 ^h 90	11 ^h 11	311 27	18 ^h 85	284 12	7 ^h 93
	12	17 ^h 40	11 ^h 27	312 14	18 ^h 79	278 48	8 ^h 06
April	17	17 ^h 90	11 ^h 41	313 3	18 ^h 76	273 23	8 ^h 13
	22	+ 18 ^h 39	+ 11 ^h 54	313 53	+ 18 ^h 76	267 59	- 8 ^h 13
	27	18 ^h 88	11 ^h 67	314 46	18 ^h 78	262 36	8 ^h 08
	1	19 ^h 38	11 ^h 79	315 42	18 ^h 83	257 15	7 ^h 97
	6	19 ^h 90	11 ^h 90	316 42	18 ^h 90	251 56	7 ^h 80
May	11	+ 20 ^h 44	+ 12 ^h 02	317 45	+ 18 ^h 99	246 42	- 7 ^h 57
	16	20 ^h 99	12 ^h 14	318 50	19 ^h 10	241 32	7 ^h 29
	21	21 ^h 58	12 ^h 26	319 58	19 ^h 23	236 26	6 ^h 95
	26	22 ^h 19	12 ^h 40	321 9	19 ^h 36	231 25	6 ^h 57
	1	+ 22 ^h 84	+ 12 ^h 55	322 22	+ 19 ^h 50	226 30	- 6 ^h 14
June	6	23 ^h 52	12 ^h 72	323 36	19 ^h 64	221 39	5 ^h 66
	11	24 ^h 23	12 ^h 90	324 49	19 ^h 78	216 53	5 ^h 15
	16	24 ^h 97	13 ^h 11	326 3	19 ^h 92	212 12	4 ^h 61
	21	+ 25 ^h 75	+ 13 ^h 33	327 14	+ 20 ^h 05	207 35	- 4 ^h 03
	26	26 ^h 55	13 ^h 57	328 23	20 ^h 16	203 1	3 ^h 42
July	31	27 ^h 38	13 ^h 83	329 29	20 ^h 25	198 31	2 ^h 79
	5	28 ^h 23	14 ^h 12	330 31	20 ^h 33	194 4	2 ^h 14
	10	+ 29 ^h 09	+ 14 ^h 41	331 28	+ 20 ^h 39	189 38	- 1 ^h 48
	15	29 ^h 96	14 ^h 72	332 21	20 ^h 43	185 15	0 ^h 81
	20	30 ^h 85	15 ^h 05	333 9	20 ^h 44	180 52	- 0 ^h 13
August	25	31 ^h 73	15 ^h 38	333 51	20 ^h 44	176 30	+ 0 ^h 54
	30	32 ^h 60	15 ^h 72	334 29	20 ^h 41	172 7	1 ^h 22
	5	+ 33 ^h 47	+ 16 ^h 07	335 2	+ 20 ^h 36	167 43	+ 1 ^h 88

CONSTANTS FOR FACILITATING THE REDUCTION OF STARS.

Month and Day.	At Greenwich Mean Midnight.					
	<i>f</i>	<i>g</i>	<i>G</i>	<i>h</i>	<i>H</i>	<i>i</i>
July 5	+33° 47'	+16° 07'	335 2	+20° 36'	167 43	+ 1° 88'
10	34° 32'	16° 42'	335 31	20° 29'	163 17	2° 53'
15	35° 16'	16° 76'	335 55	20° 20'	158 49	3° 17'
20	35° 97'	17° 10'	336 16	20° 09'	154 19	3° 78'
25	+36° 75'	+17° 43'	336 33	+19° 97'	149 45	+ 4° 37'
30	37° 51'	17° 76'	336 48	19° 84'	145 8	4° 92'
Aug. 4	38° 23'	18° 07'	337 0	19° 71'	140 26	5° 45'
9	38° 92'	18° 38'	337 11	19° 57'	135 40	5° 93'
14	+39° 58'	+18° 67'	337 20	+19° 42'	130 49	+ 6° 38'
19	40° 20'	18° 94'	337 29	19° 29'	125 54	6° 78'
24	40° 80'	19° 20'	337 38	19° 16'	120 54	7° 13'
29	41° 37'	19° 45'	337 47	19° 03'	115 49	7° 44'
Sept. 3	+41° 91'	+19° 68'	337 56	+18° 94'	110 40	+ 7° 69'
8	42° 43'	19° 90'	338 7	18° 86'	105 27	7° 89'
13	42° 94'	20° 11'	338 20	18° 80'	100 12	8° 03'
18	43° 43'	20° 31'	338 34	18° 77'	94 53	8° 11'
23	+43° 92'	+20° 50'	338 50	+18° 76'	89 33	+ 8° 14'
28	44° 40'	20° 68'	339 9	18° 77'	84 12	8° 10'
Oct. 3	44° 90'	20° 86'	339 29	18° 81'	78 52	8° 01'
8	45° 40'	21° 05'	339 52	18° 88'	73 32	7° 85'
13	+45° 92'	+21° 23'	340 18	+18° 96'	68 14	+ 7° 64'
18	46° 46'	21° 42'	340 45	19° 07'	62 58	7° 37'
23	47° 03'	21° 62'	341 14	19° 19'	57 45	7° 04'
28	47° 63'	21° 83'	341 44	19° 33'	52 35	6° 66'
Nov. 2	+48° 26'	+22° 05'	342 16	+19° 47'	47 29	+ 6° 23'
7	48° 93'	22° 29'	342 48	19° 62'	42 27	5° 75'
12	49° 63'	22° 55'	343 20	19° 77'	37 29	5° 22'
17	50° 36'	22° 82'	343 51	19° 91'	32 34	4° 65'
22	+51° 13'	+23° 11'	344 22	+20° 04'	27 43	+ 4° 04'
27	51° 93'	23° 42'	344 51	20° 16'	22 54	3° 40'
Dec. 2	52° 77'	23° 74'	345 18	20° 26'	18 9	2° 74'
7	53° 62'	24° 08'	345 44	20° 34'	13 25	2° 05'
12	+54° 48'	+24° 43'	346 6	+20° 40'	8 44	+ 1° 34'
17	55° 37'	24° 79'	346 26	20° 44'	4 3	+ 0° 63'
22	56° 25'	25° 16'	346 43	20° 45'	359 22	- 0° 10'
27	57° 14'	25° 53'	346 58	20° 43'	354 42	0° 82'
32	+58° 02'	+25° 90'	347 9	+20° 39'	350 0	- 1° 54'

APPARENT PLACES OF α URSÆ MINORIS (*Polaris*),
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	^h I	^m 7	[°] 88	['] 33	^h I	^m 6	[°] 88	['] 33	
1	^s 34	["] 32	^s 53	["] 8	^s 49	["] 90	^s 48	["] 8	1
2	33	50	53	9	49	39	48	6	2
3	32	68	54	0	48	90	48	4	3
4	31	86	54	1	48	42	48	1	4
5	31	03	54	2	47	95	47	8	5
6	30	20	54	3	47	50	47	5	6
7	29	36	54	3	47	06	47	3	7
8	28	53	54	3	46	64	47	0	8
9	27	69	54	4	46	23	46	7	9
10	26	85	54	4	45	84	46	4	10
11	26	01	54	4	45	46	46	2	11
12	25	17	54	5	45	10	45	9	12
13	24	32	54	5	44	75	45	7	13
14	23	47	54	5	44	41	45	4	14
15	22	63	54	5	44	09	45	1	15
16	21	79	54	6	43	79	44	8	16
17	20	95	54	6	43	50	44	5	17
18	20	11	54	6	43	23	44	2	18
19	19	27	54	6	42	97	43	9	19
20	18	43	54	5	42	73	43	6	20
21	17	60	54	5	42	51	43	3	21
22	16	77	54	5	42	30	43	0	22
23	15	94	54	4	42	11	42	7	23
24	15	11	54	4	41	94	42	4	24
25	14	29	54	3	41	78	42	1	25
26	13	47	54	3	41	63	41	8	26
27	12	65	54	2	41	50	41	5	27
28	11	83	54	1	41	39	41	2	28
29	11	02	54	1	41	30	40	9	29
30	10	22	54	0	-	-	40	6	30
31	9	43	53	9	-	-	47	64	31
32	8	64	53	8	-	-	-	-	32

**APPARENT PLACES of α URSÆ MINORIS (*Polaris*),
FOR THE UPPER TRANSIT AT GREENWICH.**

Day of the Month.	MAY.		JUNE		JULY		AUGUST.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	^h ^m I 6	[°] ['] 88 33	^h ^m I 7	[°] ['] 88 33	^h ^m I 7	[°] ['] 88 33	^h ^m I 7	[°] ['] 88 33	
1	47° 64	30° 9	7° 02	24° 9	32° 50	23° 7	59° 30	27° 5	1
2	48° 09	30° 7	7° 80	24° 8	33° 39	23° 7	60° 11	27° 7	2
3	48° 56	30° 4	8° 59	24° 7	34° 29	23° 8	60° 91	27° 9	3
4	49° 04	30° 2	9° 39	24° 6	35° 18	23° 8	61° 70	28° 2	4
5	49° 53	29° 9	10° 19	24° 5	36° 08	23° 9	62° 49	28° 4	5
6	50° 03	29° 6	11° 00	24° 4	36° 97	23° 9	63° 27	28° 6	6
7	50° 55	29° 4	11° 81	24° 3	37° 86	24° 0	64° 04	28° 8	7
8	51° 08	29° 2	12° 63	24° 2	38° 75	24° 1	64° 81	29° 0	8
9	51° 62	29° 0	13° 46	24° 1	39° 63	24° 2	65° 57	29° 2	9
10	52° 17	28° 8	14° 28	24° 0	40° 52	24° 2	66° 32	29° 5	10
11	52° 73	28° 6	15° 11	23° 9	41° 41	24° 3	67° 07	29° 7	11
12	53° 31	28° 3	15° 95	23° 9	42° 30	24° 4	67° 81	29° 9	12
13	53° 90	28° 1	16° 79	23° 8	43° 18	24° 5	68° 54	30° 2	13
14	54° 50	27° 9	17° 64	23° 8	44° 05	24° 6	69° 27	30° 5	14
15	55° 11	27° 7	18° 49	23° 7	44° 92	24° 8	69° 99	30° 7	15
16	55° 74	27° 5	19° 35	23° 7	45° 79	24° 9	70° 70	31° 0	16
17	56° 38	27° 3	20° 20	23° 6	46° 67	25° 0	71° 40	31° 3	17
18	57° 02	27° 1	21° 06	23° 6	47° 55	25° 1	72° 09	31° 6	18
19	57° 67	26° 9	21° 93	23° 6	48° 41	25° 3	72° 78	31° 8	19
20	58° 33	26° 7	22° 80	23° 6	49° 27	25° 5	73° 46	32° 1	20
21	59° 00	26° 5	23° 68	23° 5	50° 13	25° 6	74° 13	32° 4	21
22	59° 68	26° 4	24° 55	23° 5	50° 98	25° 8	74° 79	32° 7	22
23	60° 38	26° 2	25° 43	23° 5	51° 83	25° 9	75° 44	33° 0	23
24	61° 09	26° 1	26° 31	23° 5	52° 68	26° 0	76° 08	33° 3	24
25	61° 81	25° 9	27° 19	23° 5	53° 52	26° 2	76° 72	33° 6	25
26	62° 53	25° 7	28° 07	23° 5	54° 36	26° 4	77° 35	33° 9	26
27	63° 26	25° 5	28° 96	23° 5	55° 20	26° 6	77° 97	34° 2	27
28	64° 00	25° 4	29° 84	23° 5	56° 03	26° 8	78° 58	34° 5	28
29	64° 75	25° 3	30° 73	23° 5	56° 86	27° 0	79° 17	34° 8	29
30	65° 51	25° 2	31° 62	23° 6	57° 68	27° 1	79° 75	35° 1	30
31	66° 26	25° 0	32° 50	23° 7	58° 49	27° 3	80° 33	35° 4	31
32	67° 02	24° 9	- -	- -	59° 30	27° 5	80° 90	35° 8	32

APPARENT PLACES OF α URSE MINORIS (*Polaris*)
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	^h I	^m 8	[°] 88	['] 33	^h I	^m 8	[°] 88	['] 33	
1	20 ^s 90	35 ^s 8	32 ^s 82	46 ^s 5	33 ^s 32	58 ^s 4	81 ^s 67	8 ^s 3	1
2	21 46	36 1	33 02	46 9	33 12	58 8	81 09	8 6	2
3	22 01	36 5	33 21	47 3	32 90	59 1	80 50	8 8	3
4	22 54	36 8	33 40	47 7	32 67	59 4	79 90	9 1	4
5	23 06	37 1	33 58	48 1	32 43	59 8	79 29	9 3	5
6	23 58	37 5	33 76	48 5	32 18	60 2	78 67	9 5	6
7	24 09	37 8	33 92	48 9	31 91	60 6	78 04	9 8	7
8	24 59	38 1	34 06	49 2	31 63	60 9	77 40	10 1	8
9	25 07	38 5	34 19	49 6	31 34	61 3	76 75	10 3	9
10	25 55	38 8	34 30	50 0	31 04	61 7	76 09	10 6	10
11	26 02	39 1	34 40	50 4	30 72	62 0	75 42	10 8	11
12	26 47	39 5	34 48	50 8	30 38	62 3	74 75	11 0	12
13	26 91	39 9	34 55	51 2	30 03	62 7	74 07	11 2	13
14	27 34	40 2	34 60	51 5	29 67	63 0	73 38	11 4	14
15	27 76	40 6	34 64	51 9	29 30	63 3	72 67	11 6	15
16	28 16	40 9	34 67	52 3	28 92	63 7	71 95	11 8	16
17	28 55	41 3	34 69	52 7	28 52	64 0	71 23	12 0	17
18	28 93	41 7	34 69	53 1	28 11	64 3	70 50	12 2	18
19	29 30	42 0	34 68	53 5	27 68	64 7	69 76	12 4	19
20	29 66	42 4	34 65	53 9	27 24	65 0	69 02	12 6	20
21	30 01	42 8	34 61	54 3	26 79	65 3	68 28	12 7	21
22	30 35	43 1	34 56	54 6	26 33	65 6	67 52	12 9	22
23	30 68	43 5	34 50	55 0	25 86	65 9	66 75	13 1	23
24	31 00	43 9	34 42	55 4	25 38	66 2	65 98	13 2	24
25	31 30	44 3	34 33	55 8	24 89	66 5	65 20	13 4	25
26	31 59	44 6	34 22	56 2	24 38	66 8	64 42	13 5	26
27	31 86	45 0	34 10	56 5	23 86	67 1	63 63	13 6	27
28	32 12	45 4	33 97	56 9	23 33	67 4	62 84	13 8	28
29	32 37	45 8	33 83	57 3	22 79	67 7	62 04	13 9	29
30	32 60	46 2	33 67	57 7	22 24	68 0	61 24	14 0	30
31	32 82	46 5	33 50	58 0	21 67	68 3	60 43	14 1	31
32	- -	- -	33 32	58 4	- -	- -	59 63	14 2	32

**APPARENT PLACES OF δ URSÆ MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.**

Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	^h ^m 18 17	[°] ['] 86 35	^h ^m 18 17	[°] ['] 86 35	^h ^m 18 17	[°] ['] 86 35	^h ^m 18 17	[°] ['] 86 35	
1	^h ^m 23 00	[°] ['] 55 7	^h ^m 25 79	[°] ['] 45 9	^h ^m 33 26	[°] ['] 40 0	^h ^m 44 05	[°] ['] 38 7	1
2	22 98	55 4	25 99	45 7	33 59	39 9	44 40	38 7	2
3	22 97	55 0	26 19	45 4	33 92	39 7	44 75	38 8	3
4	22 96	54 7	26 40	45 1	34 25	39 6	45 09	38 9	4
5	22 96	54 3	26 62	44 9	34 59	39 5	45 44	39 0	5
6	22 98	54 0	26 84	44 6	34 92	39 4	45 78	39 1	6
7	23 00	53 7	27 07	44 3	35 26	39 3	46 12	39 2	7
8	23 03	53 3	27 30	44 1	35 60	39 2	46 46	39 3	8
9	23 07	53 0	27 54	43 8	35 94	39 1	46 79	39 4	9
10	23 11	52 7	27 78	43 5	36 29	39 0	47 12	39 5	10
11	23 16	52 4	28 03	43 3	36 64	38 9	47 45	39 6	11
12	23 22	52 0	28 28	43 1	36 99	38 8	47 78	39 7	12
13	23 28	51 7	28 54	42 9	37 34	38 7	48 11	39 9	13
14	23 35	51 4	28 80	42 7	37 69	38 7	48 43	40 0	14
15	23 43	51 1	29 07	42 5	38 04	38 6	48 74	40 2	15
16	23 51	50 8	29 34	42 2	38 39	38 6	49 05	40 3	16
17	23 60	50 5	29 62	42 0	38 74	38 6	49 37	40 4	17
18	23 70	50 1	29 90	41 8	39 09	38 6	49 68	40 6	18
19	23 80	49 8	30 19	41 6	39 44	38 5	49 99	40 7	19
20	23 91	49 5	30 48	41 4	39 80	38 5	50 29	40 9	20
21	24 03	49 2	30 78	41 3	40 16	38 5	50 59	41 1	21
22	24 16	48 9	31 08	41 1	40 52	38 5	50 89	41 2	22
23	24 29	48 6	31 38	40 9	40 87	38 5	51 18	41 4	23
24	24 43	48 3	31 68	40 8	41 23	38 5	51 47	41 6	24
25	24 58	48 0	31 99	40 6	41 58	38 5	51 76	41 8	25
26	24 73	47 7	32 30	40 5	41 94	38 5	52 04	42 0	26
27	24 89	47 4	32 62	40 3	42 29	38 5	52 31	42 2	27
28	25 06	47 1	32 94	40 2	42 65	38 6	52 58	42 4	28
29	25 23	46 8	33 26	40 0	43 00	38 6	52 85	42 6	29
30	25 41	46 5	- -	- -	43 35	38 6	53 11	42 8	30
31	25 60	46 2	- -	- -	43 70	38 7	53 37	43 0	31
32	25 79	45 9	- -	- -	44 05	38 7	- -	- -	32

APPARENT PLACES OF δ URSAE MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	MAY.		JUNE.		JULY.		AUGUST.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	^{h. m.} 18 17	^{° ' "} 86 35	^{h. m.} 18 17	^{° ' "} 86 35	^{h. m.} 18 17	^{° ' "} 86 36	^{h. m.} 18 17	^{° ' "} 86 36	
1	53° 37'	43° 0'	58° 72'	51° 5'	58° 28'	1° 3'	52° 11'	10° 6'	1
2	53° 62'	43° 2'	58° 80'	51° 9'	58° 17'	1° 6'	51° 83'	10° 8'	2
3	53° 87'	43° 5'	58° 87'	52° 2'	58° 05'	1° 9'	51° 54'	11° 0'	3
4	54° 12'	43° 7'	58° 93'	52° 5'	57° 92'	2° 3'	51° 25'	11° 3'	4
5	54° 36'	43° 9'	58° 99'	52° 8'	57° 79'	2° 6'	50° 95'	11° 5'	5
6	54° 59'	44° 1'	59° 05'	53° 1'	57° 66'	2° 9'	50° 65'	11° 8'	6
7	54° 82'	44° 4'	59° 10'	53° 4'	57° 52'	3° 2'	50° 34'	12° 0'	7
8	55° 04'	44° 6'	59° 14'	53° 8'	57° 37'	3° 5'	50° 03'	12° 2'	8
9	55° 26'	44° 9'	59° 17'	54° 1'	57° 22'	3° 8'	49° 71'	12° 4'	9
10	55° 48'	45° 2'	59° 20'	54° 5'	57° 06'	4° 1'	49° 39'	12° 7'	10
11	55° 69'	45° 4'	59° 22'	54° 8'	56° 89'	4° 4'	49° 07'	12° 9'	11
12	55° 89'	45° 7'	59° 23'	55° 1'	56° 72'	4° 7'	48° 74'	13° 2'	12
13	56° 08'	46° 0'	59° 23'	55° 5'	56° 54'	5° 1'	48° 41'	13° 4'	13
14	56° 27'	46° 2'	59° 24'	55° 8'	56° 36'	5° 4'	48° 08'	13° 6'	14
15	56° 46'	46° 5'	59° 24'	56° 1'	56° 17'	5° 7'	47° 74'	13° 8'	15
16	56° 64'	46° 8'	59° 23'	56° 5'	55° 97'	6° 0'	47° 39'	14° 0'	16
17	56° 81'	47° 1'	59° 21'	56° 8'	55° 77'	6° 3'	47° 04'	14° 2'	17
18	56° 98'	47° 3'	59° 18'	57° 1'	55° 56'	6° 6'	46° 69'	14° 4'	18
19	57° 14'	47° 6'	59° 15'	57° 4'	55° 35'	6° 9'	46° 34'	14° 6'	19
20	57° 30'	47° 9'	59° 11'	57° 7'	55° 13'	7° 2'	45° 99'	14° 8'	20
21	57° 45'	48° 2'	59° 07'	58° 0'	54° 91'	7° 5'	45° 63'	15° 0'	21
22	57° 60'	48° 5'	59° 02'	58° 4'	54° 68'	7° 8'	45° 26'	15° 2'	22
23	57° 74'	48° 8'	58° 96'	58° 7'	54° 45'	8° 1'	44° 89'	15° 3'	23
24	57° 87'	49° 1'	58° 90'	59° 0'	54° 21'	8° 4'	44° 52'	15° 5'	24
25	58° 00'	49° 4'	58° 83'	59° 3'	53° 97'	8° 7'	44° 14'	15° 6'	25
26	58° 12'	49° 7'	58° 76'	59° 7'	53° 72'	9° 0'	43° 76'	15° 8'	26
27	58° 24'	50° 0'	58° 68'	60° 0'	53° 46'	9° 2'	43° 38'	15° 9'	27
28	58° 35'	50° 3'	58° 59'	60° 3'	53° 20'	9° 5'	42° 99'	16° 1'	28
29	58° 45'	50° 6'	58° 49'	60° 7'	52° 94'	9° 8'	42° 60'	16° 3'	29
30	58° 55'	50° 9'	58° 39'	61° 0'	52° 67'	10° 0'	42° 21'	16° 4'	30
31	58° 64'	51° 2'	58° 28'	61° 3'	52° 39'	10° 3'	41° 82'	16° 6'	31
32	58° 72'	51° 5'	- -	- -	52° 11'	10° 6'	41° 42'	16° 7'	32

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	^h ^m 18 17	[°] ['] 86 36	^h ^m 18 17	[°] ['] 86 36	^h ^m 18 17	[°] ['] 86 36	^h ^m 18 17	[°] ['] 86 35	
1	41.42	16.7	28.78	18.7	15.90	16.1	6.37	69.4	1
2	41.02	16.8	28.34	18.7	15.52	15.9	6.13	69.1	2
3	40.62	17.0	27.91	18.6	15.15	15.8	5.90	68.9	3
4	40.22	17.1	27.48	18.6	14.79	15.6	5.68	68.6	4
5	39.82	17.2	27.04	18.6	14.41	15.5	5.46	68.3	5
6	39.41	17.4	26.61	18.6	14.04	15.3	5.25	68.0	6
7	39.00	17.5	26.18	18.6	13.68	15.1	5.04	67.7	7
8	38.59	17.6	25.75	18.5	13.32	14.9	4.84	67.4	8
9	38.18	17.7	25.32	18.5	12.97	14.7	4.65	67.1	9
10	37.76	17.8	24.90	18.4	12.62	14.5	4.47	66.8	10
11	37.35	17.8	24.47	18.4	12.28	14.3	4.29	66.5	11
12	36.93	17.9	24.04	18.3	11.94	14.1	4.11	66.2	12
13	36.51	18.0	23.61	18.3	11.60	13.9	3.94	65.8	13
14	36.09	18.1	23.19	18.2	11.26	13.7	3.78	65.5	14
15	35.66	18.2	22.77	18.2	10.93	13.5	3.62	65.2	15
16	35.24	18.3	22.35	18.1	10.61	13.3	3.47	64.9	16
17	34.81	18.3	21.93	18.0	10.29	13.1	3.33	64.6	17
18	34.39	18.4	21.51	17.9	9.98	12.8	3.20	64.3	18
19	33.96	18.4	21.09	17.8	9.67	12.6	3.08	63.9	19
20	33.53	18.5	20.68	17.7	9.37	12.4	2.96	63.6	20
21	33.10	18.5	20.27	17.6	9.07	12.1	2.85	63.3	21
22	32.67	18.6	19.86	17.5	8.78	11.9	2.75	62.9	22
23	32.23	18.6	19.45	17.4	8.49	11.6	2.65	62.6	23
24	31.80	18.6	19.05	17.3	8.20	11.3	2.56	62.3	24
25	31.37	18.7	18.65	17.2	7.92	11.1	{1.42}	{61.7}	25
26	30.94	18.7	18.25	17.1	7.65	10.9	2.33	61.3	26
27	30.51	18.7	17.85	17.0	7.38	10.6	2.27	60.9	27
28	30.08	18.7	17.45	16.8	7.12	10.3	2.22	60.6	28
29	29.64	18.7	17.06	16.7	6.86	10.0	2.17	60.2	29
30	29.21	18.7	16.67	16.5	6.61	9.7	2.13	59.9	30
31	28.78	18.7	16.28	16.3	6.37	9.4	2.10	59.6	31
32	- -	- -	15.90	16.1	- -	- -	2.07	59.3	32

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Andromedæ.			γ Pegasi. (Algenib)			β Hydri.		
	R. A.	Dec. North.		R. A.	Dec. North.		R. A.	Dec. South.	
	h m	° '		h m	° '		h m	° '	
	0 1	28 18		0 5	14 23		0 18	78 2	
Jan. 1	6 ^s .29 ^s	54 [°] .3 [']	0 [°] .9 [']	58 ^s .84 ^s	65 [°] .2 [']	0 [°] .8 [']	18 ^s .99 ^s	73 [°] .4 [']	1 [°] .3 [']
11	6 ^s .15 ^s	53 [°] .4 [']	1 [°] .2 [']	58 ^s .74 ^s	64 [°] .4 [']	0 [°] .9 [']	18 ^s .07 ^s	72 [°] .2 [']	1 [°] .8 [']
21	6 ^s .03 ^s	52 [°] .2 [']	1 [°] .3 [']	58 ^s .64 ^s	63 [°] .5 [']	1 [°] .0 [']	17 ^s .22 ^s	70 [°] .4 [']	2 [°] .3 [']
31	5 ^s .93 ^s	50 [°] .9 [']	1 [°] .5 [']	58 ^s .55 ^s	62 [°] .5 [']	1 [°] .0 [']	16 ^s .46 ^s	68 [°] .1 [']	2 [°] .8 [']
Feb. 10	5 ^s .84 ^s	49 [°] .4 [']	1 [°] .6 [']	58 ^s .48 ^s	61 [°] .5 [']	1 [°] .0 [']	15 ^s .80 ^s	65 [°] .3 [']	3 [°] .2 [']
20	5 ^s .78 ^s	47 [°] .8 [']	1 [°] .6 [']	58 ^s .43 ^s	60 [°] .5 [']	0 [°] .8 [']	15 ^s .27 ^s	62 [°] .1 [']	3 [°] .4 [']
Mar. 2	5 ^s .75 ^s	46 [°] .2 [']	1 [°] .5 [']	58 ^s .40 ^s	59 [°] .7 [']	0 [°] .8 [']	14 ^s .88 ^s	58 [°] .7 [']	3 [°] .7 [']
12	5 ^s .75 ^s	44 [°] .7 [']	1 [°] .4 [']	58 ^s .41 ^s	58 [°] .9 [']	0 [°] .5 [']	14 ^s .64 ^s	55 [°] .0 [']	3 [°] .9 [']
22	5 ^s .81 ^s	43 [°] .3 [']	1 [°] .1 [']	{58 ^s .45 ^s }	{58 [°] .1 ['] }	0 [°] .3 [']	14 ^s .55 ^s	51 [°] .1 [']	4 [°] .2 [']
Apr. 1	5 ^s .91 ^s	42 [°] .2 [']	0 [°] .8 [']	58 ^s .55 ^s	58 [°] .1 [']	0 [°] .0 [']	14 ^s .64 ^s	46 [°] .9 [']	3 [°] .9 [']
11	6 ^s .06 ^s	41 [°] .4 [']	0 [°] .4 [']	58 ^s .68 ^s	58 [°] .1 [']	0 [°] .3 [']	14 ^s .88 ^s	43 [°] .0 [']	3 [°] .7 [']
21	6 ^s .25 ^s	41 [°] .0 [']	0 [°] .1 [']	58 ^s .86 ^s	58 [°] .4 [']	0 [°] .7 [']	15 ^s .29 ^s	39 [°] .3 [']	3 [°] .6 [']
May 1	6 ^s .49 ^s	40 [°] .9 [']	0 [°] .4 [']	59 ^s .07 ^s	59 [°] .1 [']	0 [°] .9 [']	15 ^s .84 ^s	35 [°] .7 [']	3 [°] .3 [']
11	6 ^s .76 ^s	41 [°] .3 [']	0 [°] .7 [']	59 ^s .32 ^s	60 [°] .0 [']	1 [°] .3 [']	16 ^s .54 ^s	32 [°] .4 [']	3 [°] .0 [']
21	7 ^s .06 ^s	42 [°] .0 [']	1 [°] .1 [']	59 ^s .60 ^s	61 [°] .3 [']	1 [°] .5 [']	17 ^s .36 ^s	29 [°] .4 [']	2 [°] .5 [']
31	7 ^s .39 ^s	43 [°] .1 [']	1 [°] .4 [']	59 ^s .91 ^s	62 [°] .8 [']	1 [°] .8 [']	18 ^s .29 ^s	26 [°] .9 [']	2 [°] .1 [']
June 10	7 ^s .74 ^s	44 [°] .5 [']	1 [°] .8 [']	60 ^s .23 ^s	64 [°] .6 [']	1 [°] .9 [']	19 ^s .30 ^s	24 [°] .8 [']	1 [°] .6 [']
20	8 ^s .10 ^s	46 [°] .3 [']	2 [°] .1 [']	60 ^s .56 ^s	66 [°] .5 [']	2 [°] .1 [']	20 ^s .37 ^s	22 [°] .1 [']	1 [°] .1 [']
30	8 ^s .45 ^s	48 [°] .4 [']	2 [°] .2 [']	60 ^s .89 ^s	68 [°] .6 [']	2 [°] .2 [']	21 ^s .48 ^s	23 [°] .2 [']	0 [°] .4 [']
July 10	8 ^s .79 ^s	50 [°] .6 [']	2 [°] .4 [']	61 ^s .22 ^s	70 [°] .8 [']	2 [°] .2 [']	22 ^s .60 ^s	21 [°] .7 [']	0 [°] .1 [']
20	9 ^s .12 ^s	53 [°] .0 [']	2 [°] .6 [']	61 ^s .52 ^s	73 [°] .0 [']	2 [°] .3 [']	23 ^s .69 ^s	21 [°] .8 [']	0 [°] .6 [']
30	9 ^s .41 ^s	55 [°] .6 [']	2 [°] .6 [']	61 ^s .81 ^s	75 [°] .3 [']	2 [°] .1 [']	24 ^s .72 ^s	22 [°] .4 [']	1 [°] .2 [']
Aug. 9	9 ^s .68 ^s	58 [°] .2 [']	2 [°] .5 [']	62 ^s .06 ^s	77 [°] .4 [']	2 [°] .0 [']	25 ^s .66 ^s	23 [°] .6 [']	1 [°] .7 [']
19	9 ^s .91 ^s	60 [°] .7 [']	2 [°] .5 [']	62 ^s .28 ^s	79 [°] .4 [']	1 [°] .9 [']	26 ^s .49 ^s	25 [°] .3 [']	2 [°] .2 [']
29	10 ^s .10 ^s	63 [°] .2 [']	2 [°] .4 [']	62 ^s .47 ^s	81 [°] .3 [']	1 [°] .7 [']	27 ^s .17 ^s	27 [°] .5 [']	2 [°] .5 [']
Sept. 8	10 ^s .25 ^s	65 [°] .6 [']	2 [°] .3 [']	62 ^s .62 ^s	83 [°] .0 [']	1 [°] .5 [']	27 ^s .68 ^s	30 [°] .0 [']	2 [°] .8 [']
18	10 ^s .35 ^s	67 [°] .9 [']	2 [°] .0 [']	62 ^s .72 ^s	84 [°] .5 [']	1 [°] .3 [']	28 ^s .01 ^s	32 [°] .8 [']	3 [°] .0 [']
28	10 ^s .42 ^s	69 [°] .9 [']	1 [°] .9 [']	62 ^s .79 ^s	85 [°] .8 [']	1 [°] .0 [']	28 ^s .15 ^s	35 [°] .8 [']	3 [°] .0 [']
Oct. 8	10 ^s .45 ^s	71 [°] .8 [']	1 [°] .6 [']	62 ^s .83 ^s	86 [°] .8 [']	0 [°] .9 [']	28 ^s .09 ^s	38 [°] .8 [']	3 [°] .0 [']
18	10 ^s .44 ^s	73 [°] .4 [']	1 [°] .3 [']	62 ^s .83 ^s	87 [°] .7 [']	0 [°] .5 [']	27 ^s .84 ^s	41 [°] .8 [']	2 [°] .8 [']
28	10 ^s .41 ^s	74 [°] .7 [']	1 [°] .1 [']	62 ^s .81 ^s	88 [°] .2 [']	0 [°] .4 [']	27 ^s .41 ^s	44 [°] .6 [']	2 [°] .5 [']
Nov. 7	10 ^s .34 ^s	75 [°] .8 [']	0 [°] .7 [']	62 ^s .76 ^s	88 [°] .6 [']	0 [°] .2 [']	26 ^s .82 ^s	47 [°] .1 [']	2 [°] .0 [']
17	10 ^s .26 ^s	76 [°] .5 [']	0 [°] .4 [']	62 ^s .69 ^s	88 [°] .8 [']	0 [°] .1 [']	26 ^s .10 ^s	49 [°] .1 [']	1 [°] .6 [']
27	10 ^s .16 ^s	76 [°] .9 [']	0 [°] .1 [']	62 ^s .61 ^s	88 [°] .7 [']	0 [°] .3 [']	25 ^s .26 ^s	50 [°] .7 [']	1 [°] .0 [']
Dec. 7	10 ^s .04 ^s	77 [°] .0 [']	0 [°] .2 [']	62 ^s .51 ^s	88 [°] .4 [']	0 [°] .6 [']	24 ^s .35 ^s	51 [°] .7 [']	0 [°] .4 [']
17	9 ^s .91 ^s	76 [°] .8 [']	0 [°] .5 [']	62 ^s .40 ^s	88 [°] .0 [']	0 [°] .9 [']	23 ^s .40 ^s	52 [°] .1 [']	0 [°] .3 [']
27	9 ^s .78 ^s	76 [°] .3 [']	0 [°] .8 [']	62 ^s .30 ^s	87 [°] .4 [']	0 [°] .8 [']	22 ^s .43 ^s	51 [°] .8 [']	0 [°] .8 [']
37	9 ^s .65 ^s	75 [°] .5 [']		62 ^s .19 ^s	86 [°] .6 [']		21 ^s .49 ^s	51 [°] .0 [']	

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	12 Ceti.		α Cassiopeæ.		β Ceti.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. South.
	h m ° 22	° ' 4 43	h m ° 32	° ' 55 45	h m ° 36	° ' 18 45
Jan. 1	51° 07' 0.10	72° 0' 0.5	31° 50' 0.28	68° 8' 0.5	31° 17' 0.12	44° 4' 0.4
11	50° 97' 0.10	72° 5' 0.5	31° 22' 0.27	68° 3' 0.9	31° 05' 0.10	44° 8' 0.2
21	50° 87' 0.09	73° 0' 0.3	30° 95' 0.25	67° 4' 1.4	30° 95' 0.12	45° 0' 0.2
31	50° 78' 0.08	73° 3' 0.2	30° 70' 0.23	66° 0' 1.9	30° 83' 0.10	44° 8' 0.3
Feb. 10	50° 70' 0.06	73° 5' 0.0	30° 47' 0.18	64° 1' 2.1	30° 73' 0.08	44° 5' 0.7
20	50° 64' 0.04	73° 5' 0.2	30° 29' 0.14	62° 0' 2.3	30° 65' 0.05	43° 8' 0.9
Mar. 2	50° 60' 0.00	73° 3' 0.4	30° 15' 0.08	59° 7' 2.5	30° 60' 0.02	42° 9' 1.2
12	50° 60' 0.03	72° 9' 0.6	30° 07' 0.01	57° 2' 2.5	30° 58' 0.01	41° 7' 1.5
22	50° 63' 0.07	72° 3' 0.9	30° 06' 0.08	54° 7' 2.6	30° 59' 0.05	40° 2' 1.8
Apr. 1	50° 70' 0.11	71° 4' 1.2	30° 14' 0.14	52° 1' 2.2	30° 64' 0.10	38° 4' 2.0
11	50° 81' 0.15	70° 2' 1.4	30° 28' 0.22	49° 9' 1.9	30° 74' 0.13	36° 4' 2.1
21	50° 96' 0.19	68° 8' 1.5	30° 50' 0.29	48° 0' 1.5	30° 87' 0.18	34° 3' 2.3
May 1	51° 15' 0.23	67° 3' 1.8	30° 79' 0.35	46° 5' 1.1	31° 05' 0.22	32° 0' 2.3
11	51° 38' 0.26	65° 5' 1.9	31° 14' 0.41	45° 4' 0.6	31° 27' 0.25	29° 7' 2.4
21	51° 64' 0.29	63° 6' 2.1	31° 55' 0.44	44° 8' 0.2	31° 52' 0.29	27° 3' 2.5
31	51° 93' 0.30	61° 5' 2.1	31° 99' 0.48	44° 6' 0.4	31° 81' 0.31	24° 8' 2.3
June 10	52° 23' 0.32	59° 4' 2.2	32° 47' 0.49	45° 0' 0.9	32° 12' 0.32	22° 5' 2.3
20	52° 55' 0.33	57° 2' 2.1	32° 96' 0.50	45° 9' 1.3	32° 44' 0.33	20° 2' 2.1
30	52° 88' 0.32	55° 1' 2.0	33° 46' 0.49	47° 2' 1.8	32° 77' 0.34	18° 1' 1.9
July 10	53° 20' 0.31	53° 1' 1.9	33° 95' 0.47	49° 0' 2.2	33° 11' 0.32	16° 2' 1.6
20	53° 51' 0.29	51° 2' 1.6	34° 42' 0.44	51° 2' 2.5	33° 43' 0.30	14° 6' 1.3
30	53° 80' 0.26	49° 6' 1.5	34° 86' 0.40	53° 7' 2.8	33° 73' 0.29	13° 3' 1.0
Aug. 9	54° 06' 0.23	48° 1' 1.2	35° 26' 0.35	56° 5' 3.0	34° 02' 0.25	12° 3' 0.6
19	54° 29' 0.20	46° 9' 0.9	35° 61' 0.31	59° 5' 3.2	34° 27' 0.21	11° 7' 0.3
29	54° 49' 0.16	46° 0' 0.7	35° 92' 0.24	62° 7' 3.2	34° 48' 0.18	11° 4' 0.1
Sept. 8	54° 65' 0.13	45° 3' 0.4	36° 16' 0.19	65° 9' 3.3	34° 66' 0.14	11° 5' 0.4
18	54° 78' 0.08	44° 9' 0.1	36° 35' 0.14	69° 2' 3.3	34° 80' 0.10	11° 9' 0.7
28	54° 86' 0.05	44° 8' 0.1	36° 49' 0.07	72° 5' 3.1	34° 90' 0.06	12° 6' 1.0
Oct. 8	54° 91' 0.02	44° 9' 0.4	36° 56' 0.02	75° 6' 3.0	34° 96' 0.03	13° 6' 1.2
18	54° 93' 0.01	45° 3' 0.5	36° 58' 0.03	78° 6' 2.8	34° 99' 0.01	14° 8' 1.2
28	54° 92' 0.04	45° 8' 0.6	36° 55' 0.09	81° 4' 2.5	34° 98' 0.04	16° 0' 1.3
Nov. 7	54° 88' 0.06	46° 4' 0.7	36° 46' 0.12	83° 9' 2.1	34° 94' 0.06	17° 3' 1.3
17	54° 82' 0.07	47° 1' 0.7	36° 34' 0.17	86° 0' 1.8	34° 88' 0.08	18° 6' 1.3
27	54° 75' 0.09	47° 8' 0.8	36° 17' 0.21	87° 8' 1.3	34° 80' 0.10	19° 9' 1.1
Dec. 7	54° 66' 0.10	48° 6' 0.7	35° 96' 0.23	89° 1' 0.8	34° 70' 0.11	21° 0' 1.0
17	54° 56' 0.11	49° 3' 0.7	35° 73' 0.26	89° 9' 0.3	34° 59' 0.11	22° 0' 0.8
27	54° 45' 0.10	50° 0' 0.7	35° 47' 0.27	90° 2' 0.2	34° 48' 0.12	22° 8' 0.5
37	54° 35' 0.10	50° 7' 0.7	35° 20' 0.27	90° 0' 0.2	34° 36' 0.12	23° 3' 0.5

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	♋ Piscium.		♎ Ceti,		♐ Piscium.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. North.
	h m ° 55	° ' 7 7	h m ° 16	° ' 8 54	h m ° 23	° ' 14 37
Jan. 1	38° 25' 0" 10	54° 5' 0" 6	59° 31' 0" 11	43° 0' 0" 6	57° 21' 0" 11	12° 8' 0" 5
11	38° 15' 0" 11	53° 9' 0" 7	59° 20' 0" 12	43° 6' 0" 5	57° 10' 0" 11	12° 3' 0" 7
21	38° 04' 0" 11	53° 2' 0" 7	59° 08' 0" 12	44° 1' 0" 3	56° 99' 0" 13	11° 6' 0" 7
31	37° 93' 0" 10	52° 5' 0" 6	58° 96' 0" 11	44° 4' 0" 1	56° 86' 0" 12	10° 9' 0" 8
Feb. 10	37° 83' 0" 09	51° 9' 0" 5	58° 85' 0" 10	44° 5' 0" 1	56° 74' 0" 10	10° 1' 0" 7
20	37° 74' 0" 06	51° 4' 0" 4	58° 75' 0" 09	44° 4' 0" 3	56° 64' 0" 09	9° 4' 0" 7
Mar. 2	37° 68' 0" 04	51° 0' 0" 3	58° 66' 0" 06	44° 1' 0" 6	56° 55' 0" 07	8° 7' 0" 7
12	37° 64' 0" 00	50° 7' 0" 1	58° 60' 0" 02	43° 5' 0" 8	56° 48' 0" 03	8° 0' 0" 5
22	37° 64' 0" 03	50° 6' 0" 1	58° 58' 0" 01	42° 7' 1" 0	56° 45' 0" 00	7° 5' 0" 3
Apr. 1	37° 67' 0" 09	50° 7' 0" 4	58° 59' 0" 05	41° 7' 1" 5	56° 45' 0" 05	7° 2' 0" 1
11	37° 76' 0" 12	51° 1' 0" 7	58° 64' 0" 10	40° 2' 1" 5	56° 50' 0" 11	7° 1' 0" 1
21	37° 88' 0" 17	51° 8' 0" 9	58° 74' 0" 14	38° 7' 1" 8	56° 61' 0" 15	7° 2' 0" 4
May 1	38° 05' 0" 20	52° 7' 1" 1	58° 88' 0" 18	36° 9' 1" 9	56° 76' 0" 18	7° 6' 0" 6
11	38° 25' 0" 25	53° 8' 1" 4	59° 06' 0" 22	35° 0' 2" 1	56° 94' 0" 23	8° 2' 0" 9
21	38° 50' 0" 27	55° 2' 1" 6	59° 28' 0" 25	32° 9' 2" 2	57° 17' 0" 27	9° 1' 1" 2
31	38° 77' 0" 30	56° 8' 1" 8	59° 53' 0" 28	30° 7' 2" 2	57° 44' 0" 29	10° 3' 1" 4
June 10	39° 07' 0" 32	58° 6' 1" 9	59° 81' 0" 31	28° 5' 2" 2	57° 73' 0" 32	11° 7' 1" 7
20	39° 39' 0" 33	60° 5' 2" 0	60° 12' 0" 31	26° 3' 2" 2	58° 05' 0" 32	13° 4' 1" 8
30	39° 72' 0" 32	62° 5' 2" 1	60° 44' 0" 32	24° 1' 2" 0	58° 37' 0" 33	15° 2' 1" 9
July 10	40° 04' 0" 31	64° 6' 2" 0	60° 76' 0" 32	22° 1' 1" 9	58° 70' 0" 33	17° 1' 2" 0
20	40° 35' 0" 31	66° 6' 1" 9	61° 08' 0" 30	20° 2' 1" 6	59° 03' 0" 32	19° 1' 1" 9
30	40° 66' 0" 28	68° 5' 1" 9	61° 38' 0" 29	18° 6' 1" 4	59° 35' 0" 30	21° 0' 1" 9
Aug. 9	40° 94' 0" 25	70° 4' 1" 7	61° 67' 0" 27	17° 2' 1" 1	59° 65' 0" 28	22° 9' 1" 8
19	41° 19' 0" 22	72° 1' 1" 4	61° 94' 0" 24	16° 1' 0" 8	59° 93' 0" 25	24° 7' 1" 8
29	41° 41' 0" 19	73° 5' 1" 3	62° 18' 0" 21	15° 3' 0" 5	60° 18' 0" 22	26° 5' 1" 6
Sept. 8	41° 60' 0" 16	74° 8' 1" 0	62° 39' 0" 17	14° 8' 0" 1	60° 40' 0" 19	28° 1' 1" 4
18	41° 76' 0" 13	75° 8' 0" 8	62° 56' 0" 14	14° 7' 0" 1	60° 59' 0" 15	29° 5' 1" 2
28	41° 89' 0" 09	76° 6' 0" 6	62° 70' 0" 11	14° 8' 0" 4	60° 74' 0" 12	30° 7' 0" 9
Oct. 8	41° 98' 0" 05	77° 2' 0" 4	62° 81' 0" 07	15° 2' 0" 7	60° 86' 0" 09	31° 6' 0" 8
18	42° 03' 0" 02	77° 6' 0" 1	62° 88' 0" 03	15° 9' 0" 8	60° 95' 0" 05	32° 4' 0" 6
28	42° 05' 0" 00	77° 7' 0" 0	62° 91' 0" 01	16° 7' 1" 0	61° 00' 0" 03	33° 0' 0" 4
Nov. 7	42° 05' 0" 03	77° 7' 0" 2	62° 92' 0" 02	17° 7' 1" 0	61° 03' 0" 00	33° 4' 0" 2
17	42° 02' 0" 05	77° 5' 0" 3	62° 90' 0" 04	18° 7' 1" 1	61° 03' 0" 03	33° 6' 0" 0
27	41° 97' 0" 07	77° 2' 0" 4	62° 86' 0" 06	19° 8' 1" 0	61° 00' 0" 05	33° 6' 0" 1
Dec. 7	41° 90' 0" 08	76° 8' 0" 6	62° 80' 0" 08	20° 8' 1" 0	60° 95' 0" 08	33° 5' 0" 3
17	41° 82' 0" 10	76° 2' 0" 6	62° 72' 0" 10	21° 8' 0" 9	60° 87' 0" 09	33° 2' 0" 4
27	41° 72' 0" 11	75° 6' 0" 6	62° 62' 0" 11	22° 7' 0" 7	60° 78' 0" 10	32° 8' 0" 5
37	41° 61' 0" 11	75° 0' 0" 6	62° 51' 0" 11	23° 4' 0" 7	60° 68' 0" 10	32° 3' 0" 5

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Eridani. (Achernar)		ν Piscium.		β Arietis.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	h m I 32	° ' 57 56	h m I 34	° ' 4 46	h m I 46	° ' 20 7
Jan. 1	29° 13' 00"	85° 8' 00"	6° 56' 00"	28° 0' 00"	52° 22' 00"	13° 2' 00"
11	28° 80' 00"	86° 1' 00"	6° 46' 00"	27° 4' 00"	52° 11' 00"	12° 8' 00"
21	28° 47' 00"	85° 8' 00"	6° 34' 00"	26° 8' 00"	51° 98' 00"	12° 3' 00"
31	28° 15' 00"	85° 0' 00"	6° 22' 00"	26° 2' 00"	51° 85' 00"	11° 6' 00"
Feb. 10	27° 84' 00"	83° 6' 00"	6° 10' 00"	25° 7' 00"	51° 71' 00"	10° 8' 00"
20	27° 55' 00"	81° 8' 00"	5° 99' 00"	25° 3' 00"	51° 59' 00"	9° 9' 00"
Mar. 2	27° 30' 00"	79° 5' 00"	5° 90' 00"	25° 0' 00"	51° 48' 00"	9° 1' 00"
12	27° 10' 00"	76° 8' 00"	5° 83' 00"	24° 9' 00"	51° 39' 00"	8° 2' 00"
Apr. 22	26° 95' 00"	73° 8' 00"	5° 79' 00"	24° 9' 00"	51° 34' 00"	7° 5' 00"
1	26° 85' 00"	70° 5' 00"	5° 78' 00"	25° 1' 00"	51° 32' 00"	6° 8' 00"
11	26° 83' 00"	67° 0' 00"	5° 82' 00"	25° 6' 00"	51° 35' 00"	6° 4' 00"
21	26° 88' 00"	63° 0' 00"	5° 90' 00"	26° 4' 00"	51° 43' 00"	6° 1' 00"
May 1	27° 00' 00"	59° 4' 00"	6° 04' 00"	27° 3' 00"	51° 56' 00"	6° 1' 00"
11	27° 19' 00"	55° 8' 00"	6° 21' 00"	28° 5' 00"	51° 73' 00"	6° 4' 00"
21	27° 45' 00"	52° 3' 00"	6° 42' 00"	29° 9' 00"	51° 95' 00"	6° 9' 00"
31	27° 77' 00"	49° 0' 00"	6° 67' 00"	31° 5' 00"	52° 21' 00"	7° 8' 00"
June 10	28° 15' 00"	46° 0' 00"	6° 95' 00"	33° 2' 00"	52° 50' 00"	8° 9' 00"
20	28° 57' 00"	43° 4' 00"	7° 25' 00"	35° 2' 00"	52° 81' 00"	10° 2' 00"
30	29° 02' 00"	41° 1' 00"	7° 56' 00"	37° 1' 00"	53° 13' 00"	11° 7' 00"
July 10	29° 49' 00"	39° 3' 00"	7° 89' 00"	39° 1' 00"	53° 47' 00"	13° 4' 00"
20	29° 98' 00"	38° 1' 00"	8° 21' 00"	41° 0' 00"	53° 82' 00"	15° 2' 00"
30	30° 46' 00"	37° 4' 00"	8° 52' 00"	42° 9' 00"	54° 15' 00"	17° 1' 00"
Aug. 9	30° 92' 00"	37° 3' 00"	8° 82' 00"	44° 6' 00"	54° 46' 00"	19° 0' 00"
19	31° 35' 00"	37° 7' 00"	9° 09' 00"	46° 1' 00"	54° 76' 00"	20° 8' 00"
Sept. 29	31° 74' 00"	38° 7' 00"	9° 34' 00"	47° 4' 00"	55° 03' 00"	22° 6' 00"
8	32° 07' 00"	40° 2' 00"	9° 57' 00"	48° 5' 00"	55° 28' 00"	24° 3' 00"
18	32° 35' 00"	42° 2' 00"	9° 76' 00"	49° 4' 00"	55° 49' 00"	25° 9' 00"
28	32° 56' 00"	44° 5' 00"	9° 91' 00"	50° 0' 00"	55° 67' 00"	27° 3' 00"
Oct. 8	32° 70' 00"	47° 2' 00"	10° 04' 00"	50° 4' 00"	55° 82' 00"	28° 6' 00"
18	32° 77' 00"	50° 0' 00"	10° 13' 00"	50° 6' 00"	55° 93' 00"	29° 6' 00"
28	32° 77' 00"	53° 0' 00"	10° 19' 00"	50° 5' 00"	56° 02' 00"	30° 5' 00"
Nov. 7	32° 70' 00"	55° 9' 00"	10° 22' 00"	50° 3' 00"	56° 07' 00"	31° 2' 00"
17	32° 57' 00"	58° 6' 00"	10° 23' 00"	49° 9' 00"	56° 09' 00"	31° 7' 00"
27	32° 38' 00"	61° 1' 00"	10° 21' 00"	49° 6' 00"	56° 08' 00"	32° 1' 00"
Dec. 7	32° 14' 00"	63° 2' 00"	10° 17' 00"	48° 9' 00"	56° 05' 00"	32° 2' 00"
17	31° 87' 00"	64° 8' 00"	10° 10' 00"	48° 3' 00"	55° 99' 00"	32° 2' 00"
27	31° 56' 00"	66° 0' 00"	10° 02' 00"	47° 7' 00"	55° 90' 00"	32° 0' 00"
37	31° 24' 00"	66° 6' 00"	9° 92' 00"	47° 0' 00"	55° 80' 00"	31° 7' 00"

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Arietis.		67 Ceti.		ϵ Ceti.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. North.
	h m I 59	° ' 22 47	h m 2 9	° ' 7 3	h m 2 20	° ' 7 49
Jan. 1	14 ^s .78 ^s 0 ^s .12	50 ^s .0 ^s 0 ^s .3	58 ^s .16 ^s 0 ^s .11	82 ^s .9 ^s 0 ^s .8	41 ^s .01 ^s 0 ^s .10	40 ^s .8 ^s 0 ^s .6
11	14 ^s .66 ^s 0 ^s .12	49 ^s .7 ^s 0 ^s .5	58 ^s .05 ^s 0 ^s .12	83 ^s .7 ^s 0 ^s .6	40 ^s .91 ^s 0 ^s .11	40 ^s .2 ^s 0 ^s .5
21	14 ^s .54 ^s 0 ^s .14	49 ^s .2 ^s 0 ^s .7	57 ^s .93 ^s 0 ^s .13	84 ^s .3 ^s 0 ^s .5	40 ^s .80 ^s 0 ^s .12	39 ^s .7 ^s 0 ^s .6
31	14 ^s .40 ^s 0 ^s .14	48 ^s .5 ^s 0 ^s .7	57 ^s .80 ^s 0 ^s .13	84 ^s .8 ^s 0 ^s .3	40 ^s .68 ^s 0 ^s .14	39 ^s .1 ^s 0 ^s .5
Feb. 10	14 ^s .26 ^s 0 ^s .14	47 ^s .8 ^s 0 ^s .9	57 ^s .67 ^s 0 ^s .13	85 ^s .1 ^s 0 ^s .1	40 ^s .54 ^s 0 ^s .13	38 ^s .6 ^s 0 ^s .5
20	14 ^s .12 ^s 0 ^s .12	46 ^s .9 ^s 0 ^s .9	57 ^s .54 ^s 0 ^s .12	85 ^s .2 ^s 0 ^s .2	40 ^s .41 ^s 0 ^s .12	38 ^s .1 ^s 0 ^s .3
Mar. 2	14 ^s .00 ^s 0 ^s .10	46 ^s .0 ^s 0 ^s .9	57 ^s .42 ^s 0 ^s .10	85 ^s .0 ^s 0 ^s .4	40 ^s .29 ^s 0 ^s .11	37 ^s .8 ^s 0 ^s .3
12	13 ^s .90 ^s 0 ^s .07	45 ^s .1 ^s 0 ^s .9	57 ^s .32 ^s 0 ^s .08	84 ^s .6 ^s 0 ^s .6	40 ^s .18 ^s 0 ^s .08	37 ^s .5 ^s 0 ^s .1
22	13 ^s .83 ^s 0 ^s .03	44 ^s .2 ^s 0 ^s .8	57 ^s .24 ^s 0 ^s .04	84 ^s .0 ^s 0 ^s .8	40 ^s .10 ^s 0 ^s .04	37 ^s .4 ^s 0 ^s .0
Apr. 1	13 ^s .80 ^s 0 ^s .02	43 ^s .4 ^s 0 ^s .6	57 ^s .20 ^s 0 ^s .00	83 ^s .2 ^s 1 ^s .1	40 ^s .06 ^s 0 ^s .01	37 ^s .4 ^s 0 ^s .3
11	13 ^s .82 ^s 0 ^s .07	42 ^s .8 ^s 0 ^s .4	57 ^s .20 ^s 0 ^s .04	82 ^s .1 ^s 1 ^s .3	40 ^s .05 ^s 0 ^s .03	37 ^s .7 ^s 0 ^s .4
21	13 ^s .89 ^s 0 ^s .12	42 ^s .4 ^s 0 ^s .2	57 ^s .24 ^s 0 ^s .09	80 ^s .8 ^s 1 ^s .8	40 ^s .08 ^s 0 ^s .09	38 ^s .1 ^s 0 ^s .7
May 1	14 ^s .01 ^s 0 ^s .17	42 ^s .2 ^s 0 ^s .1	57 ^s .33 ^s 0 ^s .13	79 ^s .0 ^s 1 ^s .7	40 ^s .17 ^s 0 ^s .13	38 ^s .8 ^s 0 ^s .9
11	14 ^s .18 ^s 0 ^s .21	42 ^s .3 ^s 0 ^s .3	57 ^s .46 ^s 0 ^s .18	77 ^s .3 ^s 2 ^s .0	40 ^s .30 ^s 0 ^s .18	39 ^s .7 ^s 1 ^s .1
21	14 ^s .39 ^s 0 ^s .25	42 ^s .6 ^s 0 ^s .6	57 ^s .64 ^s 0 ^s .21	75 ^s .3 ^s 2 ^s .0	40 ^s .48 ^s 0 ^s .22	40 ^s .8 ^s 1 ^s .3
31	14 ^s .64 ^s 0 ^s .28	43 ^s .2 ^s 1 ^s .0	57 ^s .85 ^s 0 ^s .25	73 ^s .3 ^s 2 ^s .1	40 ^s .70 ^s 0 ^s .25	42 ^s .1 ^s 1 ^s .5
June 10	14 ^s .92 ^s 0 ^s .32	44 ^s .2 ^s 1 ^s .1	58 ^s .10 ^s 0 ^s .28	71 ^s .2 ^s 2 ^s .2	40 ^s .95 ^s 0 ^s .28	43 ^s .6 ^s 1 ^s .7
20	15 ^s .24 ^s 0 ^s .33	45 ^s .3 ^s 1 ^s .4	58 ^s .38 ^s 0 ^s .30	69 ^s .0 ^s 2 ^s .2	41 ^s .23 ^s 0 ^s .30	45 ^s .3 ^s 1 ^s .7
30	15 ^s .57 ^s 0 ^s .34	46 ^s .7 ^s 1 ^s .5	58 ^s .68 ^s 0 ^s .31	66 ^s .8 ^s 2 ^s .0	41 ^s .53 ^s 0 ^s .31	47 ^s .0 ^s 1 ^s .8
July 10	15 ^s .91 ^s 0 ^s .35	48 ^s .2 ^s 1 ^s .7	58 ^s .99 ^s 0 ^s .31	64 ^s .8 ^s 1 ^s .9	41 ^s .84 ^s 0 ^s .32	48 ^s .8 ^s 1 ^s .7
20	16 ^s .26 ^s 0 ^s .33	49 ^s .9 ^s 1 ^s .8	59 ^s .30 ^s 0 ^s .32	62 ^s .9 ^s 1 ^s .8	42 ^s .16 ^s 0 ^s .33	50 ^s .5 ^s 1 ^s .8
30	16 ^s .59 ^s 0 ^s .33	51 ^s .7 ^s 1 ^s .9	59 ^s .62 ^s 0 ^s .31	61 ^s .1 ^s 1 ^s .5	42 ^s .49 ^s 0 ^s .31	52 ^s .3 ^s 1 ^s .6
Aug. 9	16 ^s .92 ^s 0 ^s .31	53 ^s .6 ^s 1 ^s .8	59 ^s .93 ^s 0 ^s .29	59 ^s .6 ^s 1 ^s .2	42 ^s .80 ^s 0 ^s .30	53 ^s .9 ^s 1 ^s .5
19	17 ^s .23 ^s 0 ^s .29	55 ^s .4 ^s 1 ^s .8	60 ^s .22 ^s 0 ^s .26	58 ^s .4 ^s 0 ^s .9	43 ^s .10 ^s 0 ^s .27	55 ^s .4 ^s 1 ^s .4
29	17 ^s .52 ^s 0 ^s .25	57 ^s .2 ^s 1 ^s .7	60 ^s .48 ^s 0 ^s .25	57 ^s .5 ^s 0 ^s .6	43 ^s .37 ^s 0 ^s .26	56 ^s .8 ^s 1 ^s .1
Sept. 8	17 ^s .77 ^s 0 ^s .23	58 ^s .9 ^s 1 ^s .7	60 ^s .73 ^s 0 ^s .22	56 ^s .9 ^s 0 ^s .3	43 ^s .63 ^s 0 ^s .23	57 ^s .9 ^s 0 ^s .9
18	18 ^s .00 ^s 0 ^s .20	60 ^s .6 ^s 1 ^s .5	60 ^s .95 ^s 0 ^s .18	56 ^s .6 ^s 0 ^s .1	43 ^s .86 ^s 0 ^s .20	58 ^s .8 ^s 0 ^s .7
28	18 ^s .20 ^s 0 ^s .16	62 ^s .1 ^s 1 ^s .3	61 ^s .13 ^s 0 ^s .16	56 ^s .7 ^s 0 ^s .4	44 ^s .06 ^s 0 ^s .17	59 ^s .5 ^s 0 ^s .5
Oct. 8	18 ^s .36 ^s 0 ^s .13	63 ^s .4 ^s 1 ^s .2	61 ^s .29 ^s 0 ^s .12	57 ^s .1 ^s 0 ^s .6	44 ^s .23 ^s 0 ^s .14	60 ^s .0 ^s 0 ^s .2
18	18 ^s .49 ^s 0 ^s .10	64 ^s .6 ^s 1 ^s .0	61 ^s .41 ^s 0 ^s .10	57 ^s .7 ^s 0 ^s .8	44 ^s .37 ^s 0 ^s .12	60 ^s .2 ^s 0 ^s .1
28	18 ^s .59 ^s 0 ^s .07	65 ^s .6 ^s 0 ^s .9	61 ^s .51 ^s 0 ^s .06	58 ^s .5 ^s 1 ^s .0	44 ^s .49 ^s 0 ^s .08	60 ^s .3 ^s 0 ^s .1
Nov. 7	18 ^s .66 ^s 0 ^s .03	66 ^s .5 ^s 0 ^s .6	61 ^s .57 ^s 0 ^s .03	59 ^s .5 ^s 1 ^s .1	44 ^s .57 ^s 0 ^s .05	60 ^s .2 ^s 0 ^s .3
17	18 ^s .69 ^s 0 ^s .01	67 ^s .1 ^s 0 ^s .5	61 ^s .60 ^s 0 ^s .00	60 ^s .6 ^s 1 ^s .1	44 ^s .62 ^s 0 ^s .02	59 ^s .9 ^s 0 ^s .3
27	18 ^s .70 ^s 0 ^s .03	67 ^s .6 ^s 0 ^s .3	61 ^s .60 ^s 0 ^s .03	61 ^s .7 ^s 1 ^s .2	44 ^s .64 ^s 0 ^s .01	59 ^s .6 ^s 0 ^s .5
Dec. 7	18 ^s .67 ^s 0 ^s .05	67 ^s .9 ^s 0 ^s .1	61 ^s .57 ^s 0 ^s .05	62 ^s .9 ^s 1 ^s .1	44 ^s .63 ^s 0 ^s .04	59 ^s .1 ^s 0 ^s .6
17	18 ^s .62 ^s 0 ^s .08	68 ^s .0 ^s 0 ^s .0	61 ^s .52 ^s 0 ^s .07	64 ^s .0 ^s 1 ^s .0	44 ^s .59 ^s 0 ^s .06	58 ^s .5 ^s 0 ^s .5
27	18 ^s .54 ^s 0 ^s .10	68 ^s .0 ^s 0 ^s .3	61 ^s .45 ^s 0 ^s .10	65 ^s .0 ^s 0 ^s .7	44 ^s .53 ^s 0 ^s .08	58 ^s .0 ^s 0 ^s .6
37	18 ^s .44 ^s 0 ^s .10	67 ^s .7 ^s 0 ^s .3	61 ^s .35 ^s 0 ^s .10	65 ^s .7 ^s 0 ^s .7	44 ^s .45 ^s 0 ^s .08	57 ^s .4 ^s 0 ^s .6

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	γ Ceti.			α Ceti.			δ Arietis.			
	R. A.	Dec. North.		R. A.	Dec. North.		R. A.	Dec. North.		
	^h 2	^m 35	[°] 2	^h 2	^m 54	[°] 3	^h 3	^m 3	[°] 19	['] 11
Jan. 1	60° 07' 00"	0° 09'	27° 3' 00"	55° 01' 00"	0° 09'	9° 2' 00"	35° 60' 00"	0° 08'	38° 1' 00"	0° 2'
11	60° 08' 00"	0° 11'	26° 6' 00"	55° 02' 00"	0° 10'	8° 5' 00"	35° 52' 00"	0° 10'	37° 9' 00"	0° 3'
21	60° 07' 00"	0° 13'	26° 0' 00"	55° 02' 00"	0° 13'	7° 8' 00"	35° 42' 00"	0° 13'	37° 6' 00"	0° 4'
31	60° 04' 00"	0° 14'	25° 4' 00"	55° 03' 00"	0° 14'	7° 3' 00"	35° 29' 00"	0° 15'	37° 2' 00"	0° 5'
Feb. 10	60° 50' 00"	0° 14'	24° 9' 00"	55° 45' 00"	0° 14'	6° 8' 00"	35° 14' 00"	0° 15'	36° 7' 00"	0° 5'
20	60° 36' 00"	0° 13'	24° 6' 00"	55° 31' 00"	0° 14'	6° 4' 00"	34° 59' 00"	0° 15'	36° 2' 00"	0° 6'
Mar. 2	60° 23' 00"	0° 11'	24° 4' 00"	55° 17' 00"	0° 13'	6° 2' 00"	34° 48' 00"	0° 14'	35° 6' 00"	0° 6'
12	60° 12' 00"	0° 09'	24° 3' 00"	55° 04' 00"	0° 10'	6° 1' 00"	34° 37' 00"	0° 11'	35° 0' 00"	0° 5'
22	60° 03' 00"	0° 06'	24° 4' 00"	54° 54' 00"	0° 08'	6° 1' 00"	34° 59' 00"	0° 09'	34° 5' 00"	0° 5'
Apr. 1	59° 57' 00"	0° 03'	24° 7' 00"	54° 46' 00"	0° 04'	6° 4' 00"	34° 50' 00"	0° 05'	34° 0' 00"	0° 4'
11	59° 54' 00"	0° 02'	25° 2' 00"	54° 42' 00"	0° 00'	6° 8' 00"	34° 45' 00"	0° 00'	33° 6' 00"	0° 3'
21	59° 56' 00"	0° 06'	25° 9' 00"	54° 42' 00"	0° 05'	7° 4' 00"	34° 45' 00"	0° 05'	33° 3' 00"	0° 1'
May 1	60° 03' 00"	0° 11'	28° 1' 00"	54° 47' 00"	0° 10'	8° 3' 00"	34° 50' 00"	0° 10'	33° 2' 00"	0° 1'
11	60° 14' 00"	0° 16'	28° 1' 00"	54° 47' 00"	0° 14'	9° 4' 00"	34° 60' 00"	0° 15'	33° 3' 00"	0° 3'
21	60° 30' 00"	0° 20'	29° 5' 00"	55° 11' 00"	0° 19'	10° 7' 00"	34° 75' 00"	0° 19'	33° 6' 00"	0° 6'
31	60° 50' 00"	0° 23'	31° 0' 00"	55° 30' 00"	0° 22'	12° 1' 00"	34° 94' 00"	0° 23'	34° 2' 00"	0° 7'
June 10	60° 73' 00"	0° 27'	32° 7' 00"	55° 52' 00"	0° 25'	13° 7' 00"	35° 17' 00"	0° 27'	34° 9' 00"	1° 0'
20	61° 00' 00"	0° 29'	34° 5' 00"	55° 77' 00"	0° 28'	15° 4' 00"	35° 44' 00"	0° 30'	35° 9' 00"	1° 1'
30	61° 29' 00"	0° 31'	36° 3' 00"	56° 05' 00"	0° 30'	17° 1' 00"	35° 74' 00"	0° 32'	37° 0' 00"	1° 2'
July 10	61° 60' 00"	0° 31'	38° 1' 00"	56° 35' 00"	0° 31'	18° 9' 00"	36° 06' 00"	0° 32'	38° 2' 00"	1° 4'
20	61° 51' 00"	0° 31'	39° 9' 00"	56° 66' 00"	0° 31'	20° 6' 00"	36° 38' 00"	0° 33'	39° 6' 00"	1° 4'
30	62° 22' 00"	0° 32'	41° 6' 00"	56° 97' 00"	0° 32'	22° 3' 00"	36° 71' 00"	0° 34'	41° 0' 00"	1° 4'
Aug. 9	62° 54' 00"	0° 30'	43° 2' 00"	57° 29' 00"	0° 30'	23° 8' 00"	37° 05' 00"	0° 32'	42° 4' 00"	1° 5'
19	62° 84' 00"	0° 28'	44° 6' 00"	57° 59' 00"	0° 29'	25° 2' 00"	37° 37' 00"	0° 31'	43° 9' 00"	1° 3'
29	63° 12' 00"	0° 26'	45° 8' 00"	57° 88' 00"	0° 27'	26° 4' 00"	37° 68' 00"	0° 30'	45° 2' 00"	1° 3'
Sept. 8	63° 38' 00"	0° 24'	46° 7' 00"	58° 15' 00"	0° 25'	27° 3' 00"	37° 98' 00"	0° 27'	46° 5' 00"	1° 2'
18	63° 62' 00"	0° 21'	47° 4' 00"	58° 40' 00"	0° 23'	27° 9' 00"	38° 25' 00"	0° 25'	47° 7' 00"	1° 0'
28	63° 83' 00"	0° 18'	47° 8' 00"	58° 63' 00"	0° 20'	28° 3' 00"	38° 50' 00"	0° 22'	48° 7' 00"	0° 9'
Oct. 8	64° 01' 00"	0° 15'	47° 9' 00"	58° 83' 00"	0° 17'	28° 5' 00"	38° 72' 00"	0° 19'	49° 6' 00"	0° 8'
18	64° 16' 00"	0° 12'	47° 8' 00"	59° 00' 00"	0° 14'	28° 4' 00"	38° 91' 00"	0° 17'	50° 4' 00"	0° 6'
28	64° 28' 00"	0° 10'	47° 5' 00"	59° 14' 00"	0° 11'	28° 1' 00"	39° 08' 00"	0° 13'	51° 0' 00"	0° 5'
Nov. 7	64° 38' 00"	0° 06'	47° 0' 00"	59° 25' 00"	0° 09'	27° 7' 00"	39° 21' 00"	0° 11'	51° 5' 00"	0° 3'
17	64° 44' 00"	0° 03'	46° 4' 00"	59° 34' 00"	0° 05'	27° 1' 00"	39° 32' 00"	0° 07'	51° 8' 00"	0° 3'
27	64° 47' 00"	0° 01'	45° 7' 00"	59° 39' 00"	0° 02'	26° 4' 00"	39° 39' 00"	0° 03'	52° 1' 00"	0° 1'
Dec. 7	64° 48' 00"	0° 03'	45° 0' 00"	59° 41' 00"	0° 01'	25° 6' 00"	39° 42' 00"	0° 00'	52° 2' 00"	0° 0'
17	64° 45' 00"	0° 06'	44° 2' 00"	59° 40' 00"	0° 04'	24° 8' 00"	39° 42' 00"	0° 03'	52° 2' 00"	0° 1'
27	64° 39' 00"	0° 08'	43° 4' 00"	59° 36' 00"	0° 07'	24° 0' 00"	39° 39' 00"	0° 07'	52° 1' 00"	0° 2'
37	64° 31' 00"	0° 08'	42° 6' 00"	59° 29' 00"	0° 07'	23° 3' 00"	39° 32' 00"	0° 07'	51° 9' 00"	0° 2'

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Persei.		η Tauri.		γ^1 Eridani.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. South.
	^h 3 ^m 14	[°] 49 ['] 21	^h 3 ^m 39	[°] 23 ['] 40	^h 3 ^m 51	[°] 13 ['] 54
Jan. 1	18 ^h 11 ^m ^s 18	38 [°] 8 ['] ^s 09	8 ^h 00 ^m ^s 07	9 ^h 5 ^m ^s 00	28 ^h 6 ^m ^s 07	41 ^h 3 ^m ^s 14
11	17 ^h 97 ^m ^s 18	39 ^h 7 ^m ^s 06	7 ^h 93 ^m ^s 09	9 ^h 5 ^m ^s 01	28 ^h 56 ^m ^s 10	42 ^h 7 ^m ^s 12
21	17 ^h 79 ^m ^s 22	40 ^h 3 ^m ^s 03	7 ^h 84 ^m ^s 13	9 ^h 4 ^m ^s 02	28 ^h 46 ^m ^s 13	43 ^h 9 ^m ^s 09
31	17 ^h 57 ^m ^s 23	40 ^h 6 ^m ^s 02	7 ^h 71 ^m ^s 15	9 ^h 2 ^m ^s 02	28 ^h 33 ^m ^s 15	44 ^h 8 ^m ^s 07
Feb. 10	17 ^h 34 ^m ^s 25	40 ^h 4 ^m ^s 05	7 ^h 56 ^m ^s 16	9 ^h 0 ^m ^s 04	28 ^h 18 ^m ^s 17	45 ^h 5 ^m ^s 04
20	17 ^h 09 ^m ^s 24	39 ^h 9 ^m ^s 09	7 ^h 40 ^m ^s 16	8 ^h 6 ^m ^s 06	28 ^h 01 ^m ^s 17	45 ^h 9 ^m ^s 00
Mar. 2	16 ^h 85 ^m ^s 23	39 ^h 0 ^m ^s 12	7 ^h 24 ^m ^s 16	8 ^h 0 ^m ^s 05	27 ^h 84 ^m ^s 16	45 ^h 9 ^m ^s 02
12	16 ^h 62 ^m ^s 19	37 ^h 8 ^m ^s 15	7 ^h 08 ^m ^s 14	7 ^h 5 ^m ^s 06	27 ^h 68 ^m ^s 15	45 ^h 7 ^m ^s 06
22	16 ^h 43 ^m ^s 15	36 ^h 3 ^m ^s 16	6 ^h 94 ^m ^s 12	6 ^h 9 ^m ^s 06	27 ^h 53 ^m ^s 13	45 ^h 1 ^m ^s 08
Apr. 1	16 ^h 28 ^m ^s 09	34 ^h 7 ^m ^s 17	6 ^h 82 ^m ^s 08	6 ^h 3 ^m ^s 06	27 ^h 40 ^m ^s 10	44 ^h 3 ^m ^s 11
11	16 ^h 19 ^m ^s 03	33 ^h 0 ^m ^s 18	6 ^h 74 ^m ^s 03	5 ^h 7 ^m ^s 05	27 ^h 30 ^m ^s 07	43 ^h 8 ^m ^s 14
21	16 ^h 16 ^m ^s 03	31 ^h 2 ^m ^s 18	6 ^h 71 ^m ^s 01	5 ^h 2 ^m ^s 04	27 ^h 23 ^m ^s 02	41 ^h 8 ^m ^s 16
May 1	16 ^h 19 ^m ^s 11	29 ^h 4 ^m ^s 16	6 ^h 72 ^m ^s 06	4 ^h 8 ^m ^s 02	27 ^h 21 ^m ^s 02	40 ^h 2 ^m ^s 18
11	{16.18} ^s 18	{29.4} ^s 14	6 ^h 78 ^m ^s 12	4 ^h 6 ^m ^s 01	27 ^h 23 ^m ^s 07	38 ^h 4 ^m ^s 20
21	16 ^h 50 ^m ^s 24	26 ^h 2 ^m ^s 12	6 ^h 90 ^m ^s 16	4 ^h 5 ^m ^s 01	{27.23} ^s 12	{38.4} ^s 22
31	16 ^h 74 ^m ^s 30	25 ^h 0 ^m ^s 09	7 ^h 06 ^m ^s 22	4 ^h 6 ^m ^s 04	27 ^h 43 ^m ^s 17	34 ^h 0 ^m ^s 23
June 10	17 ^h 04 ^m ^s 34	24 ^h 1 ^m ^s 06	7 ^h 28 ^m ^s 24	5 ^h 0 ^m ^s 05	27 ^h 60 ^m ^s 20	31 ^h 7 ^m ^s 23
20	17 ^h 38 ^m ^s 40	23 ^h 5 ^m ^s 03	7 ^h 52 ^m ^s 29	5 ^h 5 ^m ^s 07	27 ^h 80 ^m ^s 23	29 ^h 4 ^m ^s 23
30	17 ^h 78 ^m ^s 43	23 ^h 2 ^m ^s 01	7 ^h 81 ^m ^s 30	6 ^h 2 ^m ^s 08	28 ^h 03 ^m ^s 26	27 ^h 1 ^m ^s 22
July 10	18 ^h 21 ^m ^s 44	23 ^h 3 ^m ^s 04	8 ^h 11 ^m ^s 32	7 ^h 0 ^m ^s 10	28 ^h 29 ^m ^s 28	24 ^h 9 ^m ^s 21
20	18 ^h 65 ^m ^s 45	23 ^h 7 ^m ^s 06	8 ^h 43 ^m ^s 34	8 ^h 0 ^m ^s 11	28 ^h 57 ^m ^s 30	22 ^h 8 ^m ^s 18
30	19 ^h 10 ^m ^s 46	24 ^h 3 ^m ^s 10	8 ^h 77 ^m ^s 34	9 ^h 1 ^m ^s 11	28 ^h 87 ^m ^s 30	21 ^h 0 ^m ^s 16
Aug. 9	19 ^h 56 ^m ^s 45	25 ^h 3 ^m ^s 13	9 ^h 11 ^m ^s 34	10 ^h 2 ^m ^s 12	29 ^h 17 ^m ^s 31	19 ^h 4 ^m ^s 13
19	20 ^h 01 ^m ^s 43	26 ^h 6 ^m ^s 15	9 ^h 45 ^m ^s 33	11 ^h 4 ^m ^s 12	29 ^h 48 ^m ^s 30	18 ^h 1 ^m ^s 09
29	20 ^h 44 ^m ^s 42	28 ^h 1 ^m ^s 17	9 ^h 78 ^m ^s 31	12 ^h 6 ^m ^s 11	29 ^h 78 ^m ^s 29	17 ^h 2 ^m ^s 05
Sept. 8	20 ^h 86 ^m ^s 38	29 ^h 8 ^m ^s 18	10 ^h 09 ^m ^s 31	13 ^h 7 ^m ^s 11	30 ^h 07 ^m ^s 28	16 ^h 7 ^m ^s 01
18	21 ^h 24 ^m ^s 36	31 ^h 6 ^m ^s 20	10 ^h 40 ^m ^s 28	14 ^h 8 ^m ^s 10	30 ^h 35 ^m ^s 26	16 ^h 6 ^m ^s 03
28	21 ^h 60 ^m ^s 33	33 ^h 6 ^m ^s 21	10 ^h 68 ^m ^s 26	15 ^h 8 ^m ^s 09	30 ^h 61 ^m ^s 24	16 ^h 9 ^m ^s 07
Oct. 8	21 ^h 93 ^m ^s 28	35 ^h 7 ^m ^s 22	10 ^h 94 ^m ^s 23	16 ^h 7 ^m ^s 08	30 ^h 85 ^m ^s 21	17 ^h 6 ^m ^s 10
18	22 ^h 21 ^m ^s 24	37 ^h 9 ^m ^s 21	11 ^h 17 ^m ^s 21	17 ^h 5 ^m ^s 07	31 ^h 06 ^m ^s 19	18 ^h 6 ^m ^s 13
28	22 ^h 45 ^m ^s 20	40 ^h 0 ^m ^s 22	11 ^h 38 ^m ^s 18	18 ^h 2 ^m ^s 06	31 ^h 25 ^m ^s 16	19 ^h 9 ^m ^s 16
Nov. 7	22 ^h 65 ^m ^s 15	42 ^h 2 ^m ^s 21	11 ^h 56 ^m ^s 14	18 ^h 8 ^m ^s 05	31 ^h 41 ^m ^s 13	21 ^h 5 ^m ^s 18
17	22 ^h 80 ^m ^s 10	44 ^h 3 ^m ^s 20	11 ^h 70 ^m ^s 11	19 ^h 3 ^m ^s 04	31 ^h 54 ^m ^s 09	23 ^h 3 ^m ^s 18
27	22 ^h 90 ^m ^s 05	46 ^h 3 ^m ^s 18	11 ^h 81 ^m ^s 08	19 ^h 7 ^m ^s 04	31 ^h 63 ^m ^s 06	25 ^h 1 ^m ^s 19
Dec. 7	22 ^h 95 ^m ^s 01	48 ^h 1 ^m ^s 17	11 ^h 89 ^m ^s 03	20 ^h 1 ^m ^s 02	31 ^h 69 ^m ^s 02	27 ^h 0 ^m ^s 18
17	22 ^h 94 ^m ^s 06	49 ^h 8 ^m ^s 14	11 ^h 92 ^m ^s 00	20 ^h 3 ^m ^s 02	31 ^h 71 ^m ^s 02	28 ^h 8 ^m ^s 17
27	22 ^h 88 ^m ^s 11	51 ^h 2 ^m ^s 11	11 ^h 92 ^m ^s 05	20 ^h 5 ^m ^s 01	31 ^h 69 ^m ^s 06	30 ^h 5 ^m ^s 16
37	22 ^h 77 ^m ^s 11	52 ^h 3 ^m ^s 11	11 ^h 87 ^m ^s 05	20 ^h 6 ^m ^s 01	31 ^h 63 ^m ^s 06	32 ^h 1 ^m ^s 16

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	ϵ Eridani.		ϵ Tauri.		α Tauri. (Aldebaran)	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 4 ^m 4	[°] 7 ['] 12	^h 4 ^m 20	[°] 18 ['] 51	^h 4 ^m 27	[°] 16 ['] 13
Jan. 1	60° 66' 00"	23° 6' 12"	24° 91' 00"	61° 1' 00"	51° 71' 00"	29° 9' 00"
11	60° 61' 00"	24° 8' 12"	24° 88' 00"	61° 0' 00"	51° 69' 00"	29° 7' 00"
21	60° 52' 00"	25° 9' 11"	24° 81' 00"	60° 8' 00"	51° 62' 00"	29° 4' 00"
31	60° 41' 00"	26° 8' 09"	24° 70' 00"	60° 6' 00"	51° 52' 00"	29° 1' 00"
Feb. 10	60° 27' 00"	27° 4' 06"	24° 57' 00"	60° 4' 00"	51° 40' 00"	28° 9' 00"
20	60° 11' 00"	27° 8' 04"	24° 42' 00"	60° 1' 00"	51° 25' 00"	28° 6' 00"
Mar. 2	59° 94' 00"	28° 0' 02"	24° 25' 00"	59° 8' 00"	51° 08' 00"	28° 3' 00"
12	59° 78' 00"	28° 0' 00"	24° 08' 00"	59° 5' 00"	50° 92' 00"	28° 0' 00"
22	59° 63' 00"	27° 7' 03"	23° 93' 00"	59° 1' 00"	50° 76' 00"	27° 7' 00"
Apr. 1	59° 50' 00"	27° 1' 06"	23° 80' 00"	58° 8' 00"	50° 62' 00"	27° 5' 00"
11	59° 39' 00"	26° 3' 08"	23° 69' 00"	58° 5' 00"	50° 51' 00"	27° 3' 00"
21	59° 32' 00"	25° 3' 12"	23° 62' 00"	58° 3' 00"	50° 44' 00"	27° 1' 00"
May 1	59° 30' 00"	24° 1' 15"	23° 59' 00"	58° 1' 00"	50° 40' 00"	27° 1' 00"
11	59° 32' 00"	22° 6' 16"	23° 61' 00"	58° 1' 00"	50° 41' 00"	27° 3' 00"
21	59° 38' 00"	21° 0' 20"	23° 68' 00"	58° 2' 00"	50° 47' 00"	27° 5' 00"
31	59° 50' 00"	19° 0' 20"	23° 81' 00"	58° 5' 00"	50° 59' 00"	28° 0' 00"
June 10	59° 66' 00"	17° 0' 20"	23° 97' 00"	58° 9' 00"	50° 75' 00"	28° 5' 00"
20	59° 85' 00"	15° 1' 19"	24° 18' 00"	59° 5' 00"	50° 94' 00"	29° 2' 00"
30	60° 07' 00"	13° 1' 20"	24° 42' 00"	60° 2' 00"	51° 17' 00"	30° 0' 00"
July 10	60° 33' 00"	11° 1' 20"	24° 69' 00"	61° 0' 00"	51° 43' 00"	30° 9' 00"
20	60° 60' 00"	9° 2' 19"	24° 98' 00"	61° 9' 00"	51° 72' 00"	31° 8' 00"
30	60° 89' 00"	7° 5' 17"	25° 29' 00"	62° 8' 00"	52° 02' 00"	32° 8' 00"
Aug. 9	61° 19' 00"	6° 0' 15"	25° 61' 00"	63° 8' 00"	52° 33' 00"	33° 8' 00"
19	61° 49' 00"	4° 7' 13"	25° 94' 00"	64° 8' 00"	52° 65' 00"	34° 7' 00"
29	61° 79' 00"	3° 7' 06"	26° 26' 00"	65° 6' 00"	52° 97' 00"	35° 5' 00"
Sept. 8	62° 09' 00"	3° 1' 06"	26° 58' 00"	66° 5' 00"	53° 29' 00"	36° 3' 00"
18	62° 37' 00"	2° 9' 02"	26° 89' 00"	67° 2' 00"	53° 59' 00"	36° 9' 00"
28	62° 63' 00"	2° 9' 00"	27° 19' 00"	67° 8' 00"	53° 89' 00"	37° 4' 00"
Oct. 8	62° 88' 00"	3° 3' 08"	27° 47' 00"	68° 2' 00"	54° 17' 00"	37° 7' 00"
18	63° 11' 00"	4° 1' 08"	27° 73' 00"	68° 6' 00"	54° 43' 00"	37° 9' 00"
28	63° 31' 00"	5° 1' 10"	27° 96' 00"	68° 8' 00"	54° 67' 00"	38° 0' 00"
Nov. 7	63° 48' 00"	6° 3' 12"	28° 17' 00"	68° 9' 00"	54° 88' 00"	37° 9' 00"
17	63° 62' 00"	7° 8' 15"	28° 36' 00"	69° 0' 00"	55° 07' 00"	37° 8' 00"
27	63° 73' 00"	9° 3' 15"	28° 51' 00"	69° 0' 00"	55° 23' 00"	37° 6' 00"
Dec. 7	63° 81' 00"	10° 8' 15"	28° 62' 00"	68° 9' 00"	55° 34' 00"	37° 3' 00"
17	63° 85' 00"	12° 4' 16"	28° 70' 00"	68° 8' 00"	55° 42' 00"	37° 1' 00"
27	63° 85' 00"	13° 9' 15"	28° 73' 00"	68° 7' 00"	55° 46' 00"	36° 8' 00"
37	63° 82' 00"	15° 2' 15"	28° 72' 00"	68° 6' 00"	55° 46' 00"	36° 5' 00"

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	♈ Aurigæ.		♌ Leporis.		α Aurigæ. (Capella)							
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. North.						
	^h 4	^m 47	[°] 32	['] 56	^h 4	^m 59	[°] 22	['] 33	^h 5	^m 6	[°] 45	['] 51
Jan. 1	50° 97'	0° 01'	31° 2'	0° 6'	31° 33'	0° 03'	44° 6'	2° 0'	19° 13'	0° 00'	11° 4'	1° 3'
11	50° 96'	0° 06'	31° 8'	0° 5'	31° 30'	0° 08'	46° 6'	1° 9'	19° 13'	0° 07'	12° 7'	1° 2'
21	50° 90'	0° 10'	32° 3'	0° 4'	31° 22'	0° 11'	48° 5'	1° 5'	19° 06'	0° 12'	13° 9'	1° 0'
31	50° 80'	0° 14'	32° 7'	0° 3'	31° 11'	0° 15'	50° 0'	1° 2'	18° 94'	0° 16'	14° 9'	0° 7'
Feb. 10	50° 66'	0° 17'	33° 0'	0° 0'	30° 96'	0° 18'	51° 2'	0° 9'	18° 78'	0° 20'	15° 6'	0° 5'
20	50° 49'	0° 19'	33° 0'	0° 1'	30° 78'	0° 19'	52° 1'	0° 4'	18° 58'	0° 23'	16° 1'	0° 1'
Mar. 2	50° 30'	0° 20'	32° 9'	0° 3'	30° 59'	0° 20'	52° 5'	0° 1'	18° 35'	0° 25'	16° 2'	0° 1'
12	50° 10'	0° 18'	32° 6'	0° 4'	30° 39'	0° 19'	52° 6'	0° 3'	18° 10'	0° 23'	16° 1'	0° 5'
22	49° 92'	0° 17'	32° 2'	0° 6'	30° 20'	0° 19'	52° 3'	0° 6'	17° 87'	0° 22'	15° 6'	0° 7'
Apr. 1	49° 75'	0° 14'	31° 6'	0° 7'	30° 01'	0° 16'	51° 7'	1° 0'	17° 65'	0° 19'	14° 9'	0° 9'
11	49° 61'	0° 11'	30° 9'	0° 8'	29° 85'	0° 13'	50° 7'	1° 4'	17° 46'	0° 15'	14° 0'	1° 2'
21	49° 50'	0° 06'	30° 1'	0° 8'	29° 72'	0° 09'	49° 3'	1° 6'	17° 31'	0° 09'	12° 8'	1° 3'
May 1	49° 44'	0° 00'	29° 3'	0° 8'	29° 63'	0° 05'	47° 7'	1° 9'	17° 22'	0° 04'	11° 5'	1° 4'
11	49° 44'	0° 05'	28° 5'	0° 7'	29° 58'	0° 00'	45° 8'	2° 2'	17° 18'	0° 02'	10° 1'	1° 4'
21	49° 49'	0° 09'	27° 8'	0° 6'	29° 58'	0° 04'	43° 6'	2° 3'	17° 20'	0° 09'	8° 7'	1° 4'
31	49° 58'	0° 17'	27° 2'	0° 6'	29° 62'	0° 09'	41° 3'	2° 7'	17° 29'	0° 16'	7° 3'	1° 3'
June 10	49° 75'	0° 20'	26° 6'	0° 4'	29° 71'	0° 13'	38° 6'	2° 5'	17° 45'	0° 21'	6° 0'	1° 2'
20	49° 95'	0° 25'	26° 2'	0° 2'	29° 84'	0° 17'	36° 1'	2° 6'	17° 66'	0° 26'	4° 8'	1° 1'
30	50° 20'	0° 28'	26° 0'	0° 1'	30° 01'	0° 21'	33° 5'	2° 5'	17° 92'	0° 30'	3° 7'	0° 9'
July 10	50° 48'	0° 31'	25° 9'	0° 1'	30° 22'	0° 24'	31° 0'	2° 3'	18° 22'	0° 35'	2° 8'	0° 7'
20	50° 79'	0° 33'	26° 0'	0° 2'	30° 46'	0° 26'	28° 7'	2° 1'	18° 57'	0° 38'	2° 1'	0° 5'
30	51° 12'	0° 34'	26° 2'	0° 4'	30° 72'	0° 28'	26° 6'	1° 9'	18° 95'	0° 39'	1° 6'	0° 3'
Aug. 9	51° 46'	0° 36'	26° 6'	0° 5'	31° 00'	0° 30'	24° 7'	1° 4'	19° 34'	0° 42'	1° 3'	0° 0'
19	51° 82'	0° 36'	27° 1'	0° 5'	31° 30'	0° 30'	23° 3'	1° 1'	19° 76'	0° 42'	1° 3'	0° 1'
29	52° 18'	0° 36'	27° 6'	0° 6'	31° 60'	0° 31'	22° 2'	0° 7'	20° 18'	0° 43'	1° 4'	0° 2'
Sept. 8	52° 54'	0° 36'	28° 2'	0° 6'	31° 91'	0° 30'	21° 5'	0° 1'	20° 61'	0° 42'	1° 6'	0° 5'
18	52° 90'	0° 34'	28° 8'	0° 7'	32° 21'	0° 30'	21° 4'	0° 3'	21° 03'	0° 42'	2° 1'	0° 6'
28	53° 24'	0° 33'	29° 5'	0° 7'	32° 51'	0° 28'	21° 7'	0° 8'	21° 45'	0° 41'	2° 7'	0° 8'
Oct. 8	53° 57'	0° 32'	30° 2'	0° 6'	32° 79'	0° 26'	22° 5'	1° 3'	21° 86'	0° 39'	3° 5'	0° 9'
18	53° 89'	0° 29'	30° 8'	0° 8'	33° 05'	0° 25'	23° 8'	1° 6'	22° 25'	0° 36'	4° 4'	1° 1'
28	54° 18'	0° 27'	31° 6'	0° 7'	33° 30'	0° 22'	25° 4'	2° 0'	22° 61'	0° 33'	5° 5'	1° 1'
Nov. 7	54° 45'	0° 23'	32° 3'	0° 7'	33° 52'	0° 19'	27° 4'	2° 2'	22° 94'	0° 30'	6° 6'	1° 3'
17	54° 68'	0° 20'	33° 0'	0° 8'	33° 71'	0° 15'	29° 6'	2° 5'	23° 24'	0° 26'	7° 9'	1° 4'
27	54° 88'	0° 16'	33° 8'	0° 7'	33° 86'	0° 12'	32° 1'	2° 4'	23° 50'	0° 21'	9° 3'	1° 4'
Dec. 7	55° 04'	0° 12'	34° 5'	0° 7'	33° 98'	0° 08'	34° 6'	2° 4'	23° 71'	0° 15'	10° 7'	1° 4'
17	55° 16'	0° 06'	35° 2'	0° 7'	34° 06'	0° 03'	37° 0'	2° 4'	23° 86'	0° 09'	12° 1'	1° 4'
27	55° 22'	0° 02'	35° 9'	0° 6'	34° 09'	0° 02'	39° 4'	2° 4'	23° 95'	0° 03'	13° 5'	1° 4'
37	55° 24'	0° 02'	36° 5'	0° 6'	34° 07'	0° 02'	41° 8'	2° 4'	23° 98'	0° 03'	14° 9'	1° 4'

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	β Orionis. (Rigel)		β Tauri.		δ Orionis.							
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. South.						
	^h 5	^m 7	[°] 8	['] 21	^h 5	^m 24	[°] 0	['] 24				
Jan. 1	47°50 ^s	0°01 ^s	59°1 ^s	1°5 ^s	24°87 ^s	0°02 ^s	12°3 ^s	0°4 ^s	50°08 ^s	0°01 ^s	19°3 ^s	0°24 ^s
11	47°49 ^s	0°04 ^s	60°6 ^s	1°5 ^s	24°89 ^s	0°03 ^s	12°7 ^s	0°4 ^s	50°09 ^s	0°03 ^s	20°5 ^s	1°2 ^s
21	47°45 ^s	0°09 ^s	62°0 ^s	1°4 ^s	24°86 ^s	0°07 ^s	13°1 ^s	0°3 ^s	50°06 ^s	0°07 ^s	21°6 ^s	1°1 ^s
31	47°36 ^s	0°12 ^s	63°2 ^s	1°2 ^s	24°79 ^s	0°12 ^s	13°4 ^s	0°2 ^s	49°99 ^s	0°10 ^s	22°5 ^s	0°9 ^s
Feb. 10	47°24 ^s	0°15 ^s	64°1 ^s	0°9 ^s	24°67 ^s	0°15 ^s	13°6 ^s	0°1 ^s	49°89 ^s	0°13 ^s	23°3 ^s	0°8 ^s
20	47°09 ^s	0°16 ^s	64°8 ^s	0°7 ^s	24°52 ^s	0°17 ^s	13°7 ^s	0°0 ^s	49°76 ^s	0°16 ^s	23°9 ^s	0°6 ^s
Mar. 2	46°93 ^s	0°18 ^s	65°2 ^s	0°4 ^s	24°35 ^s	0°19 ^s	13°7 ^s	0°1 ^s	49°60 ^s	0°17 ^s	24°3 ^s	0°4 ^s
12	46°75 ^s	0°17 ^s	65°4 ^s	0°2 ^s	24°16 ^s	0°18 ^s	13°6 ^s	0°3 ^s	49°43 ^s	0°17 ^s	24°5 ^s	0°2 ^s
22	46°58 ^s	0°16 ^s	65°3 ^s	0°1 ^s	23°98 ^s	0°17 ^s	13°3 ^s	0°3 ^s	49°26 ^s	0°16 ^s	24°5 ^s	0°0 ^s
Apr. 1	46°42 ^s	0°14 ^s	65°0 ^s	0°3 ^s	23°81 ^s	0°15 ^s	13°0 ^s	0°5 ^s	49°10 ^s	0°14 ^s	24°4 ^s	0°1 ^s
11	46°28 ^s	0°12 ^s	64°4 ^s	0°6 ^s	23°66 ^s	0°12 ^s	12°5 ^s	0°5 ^s	48°96 ^s	0°12 ^s	24°1 ^s	0°3 ^s
21	46°16 ^s	0°07 ^s	63°5 ^s	0°9 ^s	23°54 ^s	0°08 ^s	12°0 ^s	0°5 ^s	48°84 ^s	0°08 ^s	23°5 ^s	0°6 ^s
May 1	46°09 ^s	0°04 ^s	62°5 ^s	1°0 ^s	23°46 ^s	0°03 ^s	11°5 ^s	0°5 ^s	48°76 ^s	0°04 ^s	22°9 ^s	0°6 ^s
11	46°05 ^s	0°01 ^s	61°2 ^s	1°3 ^s	23°43 ^s	0°02 ^s	11°0 ^s	0°5 ^s	48°72 ^s	0°00 ^s	22°0 ^s	0°9 ^s
21	46°06 ^s	0°05 ^s	59°7 ^s	1°5 ^s	23°45 ^s	0°06 ^s	10°5 ^s	0°4 ^s	48°72 ^s	0°04 ^s	21°0 ^s	1°0 ^s
31	46°11 ^s	0°09 ^s	58°1 ^s	1°6 ^s	23°51 ^s	0°11 ^s	10°1 ^s	0°4 ^s	48°76 ^s	0°08 ^s	19°8 ^s	1°2 ^s
June 10	46°20 ^s	0°14 ^s	56°2 ^s	1°9 ^s	23°62 ^s	0°18 ^s	9°7 ^s	0°4 ^s	48°84 ^s	0°14 ^s	18°5 ^s	1°3 ^s
20	46°34 ^s	0°17 ^s	54°3 ^s	1°9 ^s	23°80 ^s	0°21 ^s	9°4 ^s	0°1 ^s	48°98 ^s	0°16 ^s	18°5 ^s	1°5 ^s
30	46°51 ^s	0°21 ^s	52°4 ^s	1°9 ^s	24°01 ^s	0°24 ^s	9°3 ^s	0°0 ^s	49°14 ^s	0°20 ^s	17°0 ^s	1°5 ^s
July 10	46°72 ^s	0°23 ^s	50°5 ^s	1°9 ^s	24°25 ^s	0°27 ^s	9°3 ^s	0°0 ^s	49°34 ^s	0°23 ^s	15°5 ^s	1°4 ^s
20	46°95 ^s	0°26 ^s	48°6 ^s	1°9 ^s	24°52 ^s	0°30 ^s	9°3 ^s	0°0 ^s	49°57 ^s	0°25 ^s	14°1 ^s	1°5 ^s
30	47°21 ^s	0°27 ^s	46°9 ^s	1°7 ^s	24°82 ^s	0°32 ^s	9°5 ^s	0°2 ^s	49°82 ^s	0°27 ^s	12°6 ^s	1°5 ^s
Aug. 9	47°48 ^s	0°29 ^s	45°4 ^s	1°7 ^s	25°14 ^s	0°33 ^s	9°8 ^s	0°3 ^s	49°82 ^s	0°27 ^s	11°2 ^s	1°4 ^s
19	47°77 ^s	0°29 ^s	44°2 ^s	1°2 ^s	25°47 ^s	0°35 ^s	10°0 ^s	0°2 ^s	50°09 ^s	0°28 ^s	10°0 ^s	1°2 ^s
29	48°06 ^s	0°29 ^s	44°2 ^s	1°0 ^s	25°82 ^s	0°35 ^s	10°0 ^s	0°2 ^s	50°37 ^s	0°29 ^s	9°0 ^s	1°0 ^s
Sept. 8	48°35 ^s	0°29 ^s	43°2 ^s	0°6 ^s	25°82 ^s	0°35 ^s	10°3 ^s	0°3 ^s	50°66 ^s	0°29 ^s	8°1 ^s	0°9 ^s
18	48°65 ^s	0°30 ^s	42°6 ^s	0°6 ^s	26°16 ^s	0°34 ^s	10°7 ^s	0°4 ^s	50°95 ^s	0°29 ^s	8°1 ^s	0°6 ^s
28	48°94 ^s	0°28 ^s	42°3 ^s	0°3 ^s	26°50 ^s	0°34 ^s	11°0 ^s	0°3 ^s	51°25 ^s	0°30 ^s	7°5 ^s	0°6 ^s
Oct. 8	49°22 ^s	0°28 ^s	42°3 ^s	0°1 ^s	26°84 ^s	0°34 ^s	11°0 ^s	0°3 ^s	51°25 ^s	0°29 ^s	7°2 ^s	0°3 ^s
18	49°49 ^s	0°27 ^s	42°4 ^s	0°5 ^s	26°84 ^s	0°33 ^s	11°4 ^s	0°4 ^s	51°54 ^s	0°29 ^s	7°3 ^s	0°1 ^s
28	49°73 ^s	0°24 ^s	42°9 ^s	0°8 ^s	27°17 ^s	0°32 ^s	11°7 ^s	0°3 ^s	51°83 ^s	0°29 ^s	7°3 ^s	0°3 ^s
Nov. 7	49°96 ^s	0°23 ^s	43°7 ^s	0°8 ^s	27°49 ^s	0°31 ^s	11°9 ^s	0°2 ^s	51°83 ^s	0°28 ^s	7°6 ^s	0°3 ^s
17	50°16 ^s	0°20 ^s	43°7 ^s	1°1 ^s	27°80 ^s	0°28 ^s	11°9 ^s	0°3 ^s	52°11 ^s	0°26 ^s	8°2 ^s	0°6 ^s
27	50°33 ^s	0°17 ^s	44°8 ^s	1°4 ^s	28°08 ^s	0°25 ^s	12°2 ^s	0°3 ^s	52°37 ^s	0°25 ^s	8°2 ^s	0°9 ^s
Dec. 7	50°47 ^s	0°10 ^s	46°2 ^s	1°6 ^s	28°33 ^s	0°22 ^s	12°5 ^s	0°3 ^s	52°62 ^s	0°22 ^s	9°1 ^s	1°1 ^s
17	50°57 ^s	0°06 ^s	47°8 ^s	1°8 ^s	28°55 ^s	0°19 ^s	12°8 ^s	0°3 ^s	52°84 ^s	0°22 ^s	10°2 ^s	1°2 ^s
27	50°63 ^s	0°01 ^s	49°6 ^s	1°8 ^s	28°89 ^s	0°09 ^s	13°1 ^s	0°3 ^s	52°84 ^s	0°19 ^s	11°4 ^s	1°2 ^s
37	50°64 ^s	0°01 ^s	51°4 ^s	1°9 ^s	28°74 ^s	0°15 ^s	13°4 ^s	0°4 ^s	53°03 ^s	0°16 ^s	11°4 ^s	1°4 ^s
			53°3 ^s	1°7 ^s	28°98 ^s	0°05 ^s	13°8 ^s	0°3 ^s	53°19 ^s	0°12 ^s	14°2 ^s	1°5 ^s
			56°7 ^s	1°7 ^s	29°03 ^s	0°05 ^s	14°1 ^s	0°2 ^s	53°31 ^s	0°08 ^s	15°7 ^s	1°4 ^s
							14°5 ^s	0°1 ^s	53°39 ^s	0°04 ^s	17°1 ^s	1°3 ^s
							14°5 ^s	0°1 ^s	53°43 ^s	0°04 ^s	18°4 ^s	1°3 ^s

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Leporis.		ϵ Orionis.		α Columbae.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. South.
	^h 5	^m 26	^h 5	^m 29	^h 5	^m 34
	[°] 17	['] 55	[°] 1	['] 17	[°] 34	['] 8
Jan. 1	32° 58' 0.01	29° 8' 2.0	5° 37' 0.02	37° 6' 1.3	34° 75' 0.03	61° 0' 2.7
11	32° 57' 0.04	31° 8' 1.9	5° 39' 0.02	38° 9' 1.2	34° 72' 0.08	61° 7' 2.5
21	32° 53' 0.09	33° 7' 1.6	5° 37' 0.07	40° 1' 0.9	34° 64' 0.12	66° 2' 2.1
31	32° 44' 0.13	35° 3' 1.3	5° 30' 0.10	41° 0' 0.8	34° 52' 0.17	68° 3' 1.7
Feb. 10	32° 31' 0.15	36° 6' 0.9	5° 20' 0.14	41° 8' 0.7	34° 35' 0.20	70° 0' 1.3
20	32° 16' 0.18	37° 5' 0.6	5° 06' 0.15	42° 5' 0.4	34° 15' 0.22	71° 3' 0.8
Mar. 2	31° 98' 0.19	38° 1' 0.3	4° 91' 0.17	42° 9' 0.2	33° 93' 0.23	72° 1' 0.4
12	31° 79' 0.19	38° 4' 0.1	4° 74' 0.17	43° 1' 0.0	33° 70' 0.24	72° 5' 0.1
22	31° 60' 0.18	38° 3' 0.4	4° 57' 0.16	43° 1' 0.2	33° 46' 0.23	72° 4' 0.5
Apr. 1	31° 42' 0.16	37° 9' 0.7	4° 41' 0.15	42° 9' 0.3	33° 23' 0.21	71° 9' 0.9
11	31° 26' 0.14	37° 2' 1.0	4° 26' 0.12	42° 6' 0.5	33° 02' 0.18	71° 0' 1.4
21	31° 12' 0.11	36° 2' 1.3	4° 14' 0.08	42° 1' 0.7	32° 84' 0.15	69° 6' 1.7
May 1	31° 01' 0.06	34° 9' 1.6	4° 06' 0.05	41° 4' 0.9	32° 69' 0.11	67° 9' 2.1
11	30° 95' 0.02	33° 3' 1.8	4° 01' 0.00	40° 5' 1.0	32° 58' 0.06	65° 8' 2.3
21	30° 93' 0.02	31° 5' 2.0	4° 01' 0.04	39° 5' 1.2	32° 52' 0.02	63° 5' 2.6
31	30° 95' 0.06	29° 5' 2.2	4° 05' 0.08	38° 3' 1.3	32° 50' 0.03	60° 9' 2.7
June 10	31° 01' 0.12	27° 3' 2.5	4° 13' 0.12	37° 0' 1.6	32° 53' 0.09	58° 2' 3.2
20	31° 13' 0.15	24° 8' 2.3	4° 25' 0.16	35° 4' 1.5	32° 62' 0.13	55° 0' 2.9
30	31° 28' 0.19	22° 5' 2.3	4° 41' 0.20	33° 9' 1.5	32° 75' 0.18	52° 1' 2.8
July 10	31° 47' 0.21	20° 2' 2.1	4° 61' 0.22	32° 4' 1.5	32° 93' 0.21	49° 3' 2.7
20	31° 68' 0.24	18° 1' 2.0	4° 83' 0.24	30° 9' 1.4	33° 14' 0.24	46° 6' 2.5
30	31° 92' 0.27	16° 1' 1.8	5° 07' 0.27	29° 5' 1.2	33° 38' 0.27	44° 1' 2.1
Aug. 9	32° 19' 0.28	14° 3' 1.5	5° 34' 0.28	28° 3' 1.1	33° 65' 0.30	42° 0' 1.8
19	32° 47' 0.29	12° 8' 1.1	5° 62' 0.29	27° 2' 0.9	33° 95' 0.31	40° 2' 1.4
29	32° 76' 0.30	11° 7' 0.7	5° 91' 0.29	26° 3' 0.5	34° 26' 0.32	38° 8' 0.8
Sept. 8	33° 06' 0.30	11° 0' 0.3	6° 20' 0.30	25° 8' 0.3	34° 58' 0.32	38° 0' 0.3
18	33° 36' 0.29	10° 7' 0.2	6° 50' 0.29	25° 5' 0.0	34° 90' 0.33	37° 7' 0.2
28	33° 65' 0.29	10° 9' 0.6	6° 79' 0.29	25° 5' 0.4	35° 23' 0.31	37° 9' 0.8
Oct. 8	33° 94' 0.28	11° 5' 1.1	7° 08' 0.28	25° 9' 0.6	35° 54' 0.31	38° 7' 1.4
18	34° 22' 0.26	12° 6' 1.5	7° 36' 0.26	26° 5' 0.9	35° 85' 0.28	40° 1' 1.9
28	34° 48' 0.24	14° 1' 1.7	7° 62' 0.25	27° 4' 1.1	36° 13' 0.26	42° 0' 2.3
Nov. 7	34° 72' 0.22	15° 8' 2.1	7° 87' 0.22	28° 5' 1.3	36° 39' 0.23	44° 3' 2.6
17	34° 94' 0.18	17° 9' 2.3	8° 09' 0.20	29° 8' 1.5	36° 62' 0.19	46° 9' 2.9
27	35° 12' 0.15	20° 2' 2.3	8° 29' 0.16	31° 3' 1.5	36° 81' 0.15	49° 8' 3.0
Dec. 7	35° 27' 0.11	22° 5' 2.4	8° 45' 0.13	32° 8' 1.5	36° 96' 0.10	52° 8' 3.1
17	35° 38' 0.06	24° 9' 2.3	8° 58' 0.08	34° 3' 1.5	37° 06' 0.05	55° 9' 3.0
27	35° 44' 0.02	27° 2' 2.2	8° 66' 0.04	35° 8' 1.4	37° 11' 0.00	58° 9' 2.9
37	35° 46' 0.02	29° 4' 2.2	8° 70' 0.04	37° 2' 1.4	37° 11' 0.00	61° 8' 2.9

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Orionis.		γ Orionis.		μ Geminorum.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h ^m 5 47	[°] ['] 7 22	^h ^m 5 59	[°] ['] 14 46	^h ^m 6 14	[°] ['] 22 34
Jan. I	^s 34 [°] 20 ['] 0 ^{''} 04	43 [°] 8 ['] 0 ^{''} 09	^s 33 [°] 27 ['] 0 ^{''} 05	60 [°] 1 ['] 0 ^{''} 05	^s 27 [°] 88 ['] 0 ^{''} 07	61 [°] 2 ['] 0 ^{''} 00
II	34 [°] 24 ['] 0 ^{''} 00	42 [°] 9 ['] 0 ^{''} 07	33 [°] 32 ['] 0 ^{''} 01	59 [°] 6 ['] 0 ^{''} 04	27 [°] 95 ['] 0 ^{''} 03	61 [°] 2 ['] 0 ^{''} 00
21	34 [°] 24 ['] 0 ^{''} 05	42 [°] 2 ['] 0 ^{''} 07	33 [°] 33 ['] 0 ^{''} 03	59 [°] 2 ['] 0 ^{''} 02	27 [°] 98 ['] 0 ^{''} 02	61 [°] 2 ['] 0 ^{''} 01
31	34 [°] 19 ['] 0 ^{''} 09	41 [°] 5 ['] 0 ^{''} 05	33 [°] 30 ['] 0 ^{''} 08	59 [°] 0 ['] 0 ^{''} 03	27 [°] 96 ['] 0 ^{''} 07	61 [°] 3 ['] 0 ^{''} 01
Feb. 10	34 [°] 10 ['] 0 ^{''} 12	41 [°] 0 ['] 0 ^{''} 04	33 [°] 22 ['] 0 ^{''} 12	58 [°] 7 ['] 0 ^{''} 01	27 [°] 89 ['] 0 ^{''} 11	61 [°] 4 ['] 0 ^{''} 02
20	33 [°] 98 ['] 0 ^{''} 15	40 [°] 6 ['] 0 ^{''} 03	33 [°] 10 ['] 0 ^{''} 14	58 [°] 6 ['] 0 ^{''} 01	27 [°] 78 ['] 0 ^{''} 15	61 [°] 6 ['] 0 ^{''} 01
Mar. 2	33 [°] 83 ['] 0 ^{''} 16	40 [°] 3 ['] 0 ^{''} 02	32 [°] 96 ['] 0 ^{''} 16	58 [°] 5 ['] 0 ^{''} 01	27 [°] 63 ['] 0 ^{''} 16	61 [°] 7 ['] 0 ^{''} 01
12	33 [°] 67 ['] 0 ^{''} 17	40 [°] 1 ['] 0 ^{''} 01	32 [°] 80 ['] 0 ^{''} 17	58 [°] 4 ['] 0 ^{''} 01	27 [°] 47 ['] 0 ^{''} 18	61 [°] 8 ['] 0 ^{''} 00
22	33 [°] 50 ['] 0 ^{''} 16	40 [°] 0 ['] 0 ^{''} 01	32 [°] 63 ['] 0 ^{''} 17	58 [°] 3 ['] 0 ^{''} 00	27 [°] 29 ['] 0 ^{''} 17	61 [°] 8 ['] 0 ^{''} 00
Apr. I	33 [°] 34 ['] 0 ^{''} 15	40 [°] 1 ['] 0 ^{''} 01	32 [°] 46 ['] 0 ^{''} 16	58 [°] 3 ['] 0 ^{''} 00	27 [°] 12 ['] 0 ^{''} 17	61 [°] 8 ['] 0 ^{''} 01
11	33 [°] 19 ['] 0 ^{''} 12	40 [°] 2 ['] 0 ^{''} 02	32 [°] 30 ['] 0 ^{''} 13	58 [°] 3 ['] 0 ^{''} 00	26 [°] 95 ['] 0 ^{''} 14	61 [°] 7 ['] 0 ^{''} 01
21	33 [°] 07 ['] 0 ^{''} 09	40 [°] 4 ['] 0 ^{''} 04	32 [°] 17 ['] 0 ^{''} 10	58 [°] 3 ['] 0 ^{''} 01	26 [°] 81 ['] 0 ^{''} 11	61 [°] 6 ['] 0 ^{''} 02
May I	32 [°] 98 ['] 0 ^{''} 06	40 [°] 8 ['] 0 ^{''} 04	32 [°] 07 ['] 0 ^{''} 06	58 [°] 4 ['] 0 ^{''} 02	26 [°] 70 ['] 0 ^{''} 07	61 [°] 4 ['] 0 ^{''} 02
11	32 [°] 92 ['] 0 ^{''} 01	41 [°] 2 ['] 0 ^{''} 06	32 [°] 01 ['] 0 ^{''} 02	58 [°] 6 ['] 0 ^{''} 02	26 [°] 63 ['] 0 ^{''} 04	61 [°] 2 ['] 0 ^{''} 01
21	32 [°] 91 ['] 0 ^{''} 02	41 [°] 8 ['] 0 ^{''} 07	31 [°] 99 ['] 0 ^{''} 02	58 [°] 8 ['] 0 ^{''} 02	26 [°] 59 ['] 0 ^{''} 01	61 [°] 1 ['] 0 ^{''} 02
31	32 [°] 93 ['] 0 ^{''} 07	42 [°] 5 ['] 0 ^{''} 08	32 [°] 01 ['] 0 ^{''} 06	59 [°] 0 ['] 0 ^{''} 04	26 [°] 60 ['] 0 ^{''} 06	60 [°] 9 ['] 0 ^{''} 01
June 10	33 [°] 00 ['] 0 ^{''} 12	43 [°] 3 ['] 1 ^{''} 00	32 [°] 07 ['] 0 ^{''} 11	59 [°] 4 ['] 0 ^{''} 04	26 [°] 66 ['] 0 ^{''} 09	60 [°] 8 ['] 0 ^{''} 01
20	33 [°] 12 ['] 0 ^{''} 15	44 [°] 3 ['] 1 ^{''} 00	32 [°] 18 ['] 0 ^{''} 16	59 [°] 8 ['] 0 ^{''} 05	26 [°] 75 ['] 0 ^{''} 16	60 [°] 7 ['] 0 ^{''} 00
30	33 [°] 27 ['] 0 ^{''} 19	45 [°] 3 ['] 0 ^{''} 09	32 [°] 34 ['] 0 ^{''} 18	60 [°] 3 ['] 0 ^{''} 06	26 [°] 91 ['] 0 ^{''} 18	60 [°] 7 ['] 0 ^{''} 00
July 10	33 [°] 46 ['] 0 ^{''} 22	46 [°] 2 ['] 1 ^{''} 00	32 [°] 52 ['] 0 ^{''} 22	60 [°] 9 ['] 0 ^{''} 05	27 [°] 09 ['] 0 ^{''} 21	60 [°] 7 ['] 0 ^{''} 01
20	33 [°] 68 ['] 0 ^{''} 24	47 [°] 2 ['] 1 ^{''} 00	32 [°] 74 ['] 0 ^{''} 24	61 [°] 4 ['] 0 ^{''} 06	27 [°] 30 ['] 0 ^{''} 24	60 [°] 8 ['] 0 ^{''} 00
30	33 [°] 92 ['] 0 ^{''} 26	48 [°] 2 ['] 0 ^{''} 09	32 [°] 98 ['] 0 ^{''} 26	62 [°] 0 ['] 0 ^{''} 05	27 [°] 54 ['] 0 ^{''} 27	60 [°] 8 ['] 0 ^{''} 01
Aug. 9	34 [°] 18 ['] 0 ^{''} 28	49 [°] 1 ['] 0 ^{''} 07	33 [°] 24 ['] 0 ^{''} 28	62 [°] 5 ['] 0 ^{''} 04	27 [°] 81 ['] 0 ^{''} 28	60 [°] 9 ['] 0 ^{''} 00
19	34 [°] 46 ['] 0 ^{''} 29	49 [°] 8 ['] 0 ^{''} 06	33 [°] 52 ['] 0 ^{''} 30	62 [°] 9 ['] 0 ^{''} 04	28 [°] 09 ['] 0 ^{''} 31	60 [°] 9 ['] 0 ^{''} 01
29	34 [°] 75 ['] 0 ^{''} 29	50 [°] 4 ['] 0 ^{''} 04	33 [°] 82 ['] 0 ^{''} 30	63 [°] 3 ['] 0 ^{''} 02	28 [°] 40 ['] 0 ^{''} 31	61 [°] 0 ['] 0 ^{''} 01
Sept. 8	35 [°] 04 ['] 0 ^{''} 31	50 [°] 8 ['] 0 ^{''} 02	34 [°] 12 ['] 0 ^{''} 30	63 [°] 5 ['] 0 ^{''} 02	28 [°] 71 ['] 0 ^{''} 31	60 [°] 9 ['] 0 ^{''} 00
18	35 [°] 35 ['] 0 ^{''} 30	51 [°] 0 ['] 0 ^{''} 00	34 [°] 42 ['] 0 ^{''} 32	63 [°] 6 ['] 0 ^{''} 01	29 [°] 03 ['] 0 ^{''} 32	60 [°] 9 ['] 0 ^{''} 02
28	35 [°] 65 ['] 0 ^{''} 30	51 [°] 0 ['] 0 ^{''} 02	34 [°] 74 ['] 0 ^{''} 31	63 [°] 5 ['] 0 ^{''} 02	29 [°] 36 ['] 0 ^{''} 33	60 [°] 7 ['] 0 ^{''} 03
Oct. 8	35 [°] 95 ['] 0 ^{''} 29	50 [°] 8 ['] 0 ^{''} 05	35 [°] 05 ['] 0 ^{''} 31	63 [°] 3 ['] 0 ^{''} 04	29 [°] 69 ['] 0 ^{''} 33	60 [°] 4 ['] 0 ^{''} 03
18	36 [°] 24 ['] 0 ^{''} 28	50 [°] 3 ['] 0 ^{''} 07	35 [°] 36 ['] 0 ^{''} 30	62 [°] 9 ['] 0 ^{''} 04	30 [°] 02 ['] 0 ^{''} 32	60 [°] 1 ['] 0 ^{''} 04
28	36 [°] 52 ['] 0 ^{''} 27	49 [°] 6 ['] 0 ^{''} 08	35 [°] 66 ['] 0 ^{''} 28	62 [°] 5 ['] 0 ^{''} 06	30 [°] 34 ['] 0 ^{''} 30	59 [°] 7 ['] 0 ^{''} 04
Nov. 7	36 [°] 79 ['] 0 ^{''} 24	48 [°] 8 ['] 1 ^{''} 00	35 [°] 94 ['] 0 ^{''} 26	61 [°] 9 ['] 0 ^{''} 07	30 [°] 64 ['] 0 ^{''} 29	59 [°] 3 ['] 0 ^{''} 03
17	37 [°] 03 ['] 0 ^{''} 22	47 [°] 8 ['] 1 ^{''} 00	36 [°] 20 ['] 0 ^{''} 24	61 [°] 2 ['] 0 ^{''} 07	30 [°] 93 ['] 0 ^{''} 27	59 [°] 0 ['] 0 ^{''} 04
27	37 [°] 25 ['] 0 ^{''} 19	46 [°] 8 ['] 1 ^{''} 01	36 [°] 44 ['] 0 ^{''} 21	60 [°] 5 ['] 0 ^{''} 07	31 [°] 20 ['] 0 ^{''} 23	58 [°] 6 ['] 0 ^{''} 03
Dec. 7	37 [°] 44 ['] 0 ^{''} 15	45 [°] 7 ['] 1 ^{''} 01	36 [°] 65 ['] 0 ^{''} 17	59 [°] 8 ['] 0 ^{''} 07	31 [°] 43 ['] 0 ^{''} 19	58 [°] 3 ['] 0 ^{''} 03
17	37 [°] 59 ['] 0 ^{''} 11	44 [°] 6 ['] 1 ^{''} 00	36 [°] 82 ['] 0 ^{''} 13	59 [°] 1 ['] 0 ^{''} 05	31 [°] 62 ['] 0 ^{''} 15	58 [°] 0 ['] 0 ^{''} 01
27	37 [°] 70 ['] 0 ^{''} 07	43 [°] 6 ['] 0 ^{''} 09	36 [°] 95 ['] 0 ^{''} 08	58 [°] 6 ['] 0 ^{''} 06	31 [°] 77 ['] 0 ^{''} 11	57 [°] 9 ['] 0 ^{''} 01
37	37 [°] 77 ['] 0 ^{''} 04	42 [°] 7 ['] 0 ^{''} 09	37 [°] 03 ['] 0 ^{''} 08	58 [°] 0 ['] 0 ^{''} 06	31 [°] 88 ['] 0 ^{''} 11	57 [°] 8 ['] 0 ^{''} 01

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Argus. (<i>Canopus</i>)		γ Geminorum.		δ Cephei.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 6	^m 20	^h 6	^m 29	^h 6	^m 33
	[°] 52	['] 36	[°] 16	['] 30	[°] 87	['] 14
Jan. 1	51 ^s .85	67 ^s .0	36 ^s .00	62 ^s .5	41 ^s .78	64 ^s .2
11	51 ^s .82	70 ^s .5	36 ^s .08	62 ^s .0	42 ^s .20	67 ^s .4
21	51 ^s .72	73 ^s .7	36 ^s .12	61 ^s .7	41 ^s .67	70 ^s .5
31	51 ^s .55	76 ^s .6	36 ^s .11	61 ^s .5	40 ^s .28	73 ^s .4
Feb. 10	51 ^s .33	79 ^s .0	36 ^s .05	61 ^s .4	38 ^s .08	76 ^s .0
20	51 ^s .05	81 ^s .1	35 ^s .96	61 ^s .3	35 ^s .16	78 ^s .3
Mar. 2	50 ^s .73	82 ^s .6	35 ^s .83	61 ^s .3	31 ^s .66	80 ^s .0
12	50 ^s .39	83 ^s .7	35 ^s .67	61 ^s .3	27 ^s .74	81 ^s .2
Apr. 22	50 ^s .04	84 ^s .2	35 ^s .50	61 ^s .3	23 ^s .58	81 ^s .8
1	49 ^s .68	84 ^s .2	35 ^s .33	61 ^s .4	19 ^s .34	81 ^s .8
11	49 ^s .34	83 ^s .7	35 ^s .17	61 ^s .4	15 ^s .22	81 ^s .2
21	49 ^s .02	82 ^s .6	35 ^s .03	61 ^s .4	11 ^s .38	80 ^s .0
May 1	48 ^s .73	81 ^s .1	34 ^s .91	61 ^s .5	7 ^s .94	78 ^s .3
11	48 ^s .49	79 ^s .2	34 ^s .83	61 ^s .6	5 ^s .03	76 ^s .1
21	48 ^s .29	76 ^s .9	34 ^s .79	61 ^s .7	2 ^s .78	73 ^s .6
31	48 ^s .15	74 ^s .3	34 ^s .78	61 ^s .8	1 ^s .27	70 ^s .8
June 10	48 ^s .07	71 ^s .4	34 ^s .82	62 ^s .1	0 ^s .50	67 ^s .8
20	48 ^s .05	68 ^s .3	34 ^s .90	62 ^s .3	0 ^s .52	64 ^s .7
30	48 ^s .10	64 ^s .8	35 ^s .03	62 ^s .6	1 ^s .44	61 ^s .3
July 10	48 ^s .21	61 ^s .6	35 ^s .19	62 ^s .9	3 ^s .09	58 ^s .1
20	48 ^s .37	58 ^s .5	35 ^s .38	63 ^s .2	5 ^s .46	55 ^s .1
30	48 ^s .59	55 ^s .5	35 ^s .60	63 ^s .6	8 ^s .50	52 ^s .3
Aug. 9	48 ^s .86	52 ^s .8	35 ^s .84	63 ^s .8	12 ^s .14	49 ^s .8
19	49 ^s .17	50 ^s .6	36 ^s .11	64 ^s .0	16 ^s .32	47 ^s .6
Sept. 29	49 ^s .52	48 ^s .7	36 ^s .39	64 ^s .2	20 ^s .95	45 ^s .7
8	49 ^s .90	47 ^s .4	36 ^s .68	64 ^s .2	25 ^s .94	44 ^s .2
18	50 ^s .30	46 ^s .6	36 ^s .99	64 ^s .1	31 ^s .20	43 ^s .2
28	50 ^s .70	46 ^s .5	37 ^s .30	63 ^s .8	36 ^s .63	42 ^s .6
Oct. 8	51 ^s .12	47 ^s .0	37 ^s .62	63 ^s .4	42 ^s .11	42 ^s .5
18	51 ^s .52	48 ^s .2	37 ^s .94	62 ^s .9	47 ^s .54	42 ^s .8
28	51 ^s .91	50 ^s .0	38 ^s .25	62 ^s .3	52 ^s .82	43 ^s .7
Nov. 7	52 ^s .27	52 ^s .3	38 ^s .55	61 ^s .6	57 ^s .77	45 ^s .0
17	52 ^s .59	55 ^s .1	38 ^s .84	60 ^s .8	62 ^s .32	46 ^s .8
27	52 ^s .86	58 ^s .3	39 ^s .11	60 ^s .1	66 ^s .34	49 ^s .0
Dec. 7	53 ^s .07	61 ^s .7	39 ^s .35	59 ^s .3	69 ^s .70	51 ^s .5
17	53 ^s .22	65 ^s .3	39 ^s .55	58 ^s .7	72 ^s .30	54 ^s .3
27	53 ^s .30	69 ^s .0	39 ^s .71	58 ^s .1	74 ^s .08	57 ^s .3
37	53 ^s .31	72 ^s .5	39 ^s .82	57 ^s .6	74 ^s .95	60 ^s .5

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Canis Majoris. (Sirius)		ϵ Canis Majoris.		γ Canis Majoris.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. South.
	^h 6 ^m 38	[°] 16 ['] 31	^h 6 ^m 53	[°] 28 ['] 46	^h 6 ^m 57	[°] 15 ['] 25
Jan. 1	58° 03' 0.07	28° 2' 2.3	6° 97' 0.07	53° 4' 2.9	24° 62' 0.09	34° 7' 2.4
11	58° 10' 0.02	30° 5' 2.2	7° 04' 0.02	56° 3' 2.8	24° 71' 0.04	37° 1' 2.2
21	58° 12' 0.03	32° 7' 2.0	7° 06' 0.04	59° 1' 2.5	24° 75' 0.01	39° 3' 1.9
31	58° 09' 0.07	34° 7' 1.7	7° 02' 0.08	61° 6' 2.2	24° 74' 0.06	41° 2' 1.7
Feb. 10	58° 02' 0.12	36° 4' 1.4	6° 94' 0.13	63° 8' 1.8	24° 68' 0.10	42° 9' 1.4
20	57° 90' 0.15	37° 8' 1.1	6° 81' 0.17	65° 6' 1.5	24° 58' 0.13	44° 3' 1.2
Mar. 2	57° 75' 0.17	38° 9' 0.7	6° 64' 0.19	67° 1' 1.1	24° 45' 0.16	45° 5' 0.8
12	57° 58' 0.18	39° 6' 0.5	6° 45' 0.21	68° 2' 0.6	24° 29' 0.18	46° 3' 0.5
22	57° 40' 0.19	40° 1' 0.1	6° 24' 0.21	68° 8' 0.3	24° 11' 0.18	46° 8' 0.1
Apr. 1	57° 21' 0.18	40° 2' 0.3	6° 03' 0.21	69° 1' 0.2	23° 93' 0.18	46° 9' 0.1
11	57° 03' 0.16	39° 9' 0.5	5° 82' 0.20	68° 9' 0.5	23° 75' 0.16	46° 8' 0.4
21	56° 87' 0.14	39° 4' 0.8	5° 62' 0.17	68° 4' 0.9	23° 59' 0.15	46° 4' 0.7
May 1	56° 73' 0.11	38° 6' 1.1	5° 45' 0.14	67° 5' 1.3	23° 44' 0.12	45° 7' 1.0
11	56° 62' 0.08	37° 5' 1.3	5° 31' 0.11	66° 2' 1.6	23° 32' 0.08	44° 7' 1.3
21	56° 54' 0.04	36° 2' 1.6	5° 20' 0.08	64° 6' 1.9	23° 24' 0.05	43° 4' 1.4
31	56° 50' 0.00	34° 6' 1.8	5° 12' 0.03	62° 7' 2.2	23° 19' 0.01	42° 0' 1.7
June 10	56° 50' 0.04	32° 8' 1.8	5° 09' 0.01	60° 5' 2.3	23° 18' 0.03	40° 3' 1.8
20	56° 54' 0.08	31° 0' 2.0	5° 10' 0.06	58° 2' 2.4	23° 21' 0.06	38° 5' 1.9
30	56° 41' 0.12	28° 8' 2.1	5° 16' 0.10	55° 8' 2.8	23° 27' 0.11	36° 6' 2.1
July 10	56° 75' 0.15	26° 7' 1.9	5° 26' 0.13	53° 0' 2.5	23° 38' 0.14	34° 5' 1.9
20	56° 90' 0.18	24° 8' 1.9	5° 39' 0.17	50° 5' 2.4	23° 52' 0.17	32° 6' 1.9
30	57° 03' 0.22	22° 9' 1.7	5° 56' 0.20	48° 1' 2.2	23° 69' 0.19	30° 7' 1.7
Aug. 9	57° 30' 0.23	21° 2' 1.5	5° 76' 0.23	45° 9' 1.9	23° 88' 0.22	29° 0' 1.4
19	57° 53' 0.25	19° 7' 1.2	5° 99' 0.25	44° 0' 1.6	24° 10' 0.25	27° 6' 1.2
29	57° 78' 0.28	18° 5' 0.8	6° 24' 0.28	42° 4' 1.2	24° 35' 0.26	26° 4' 0.9
Sept. 8	58° 06' 0.28	17° 7' 0.4	6° 52' 0.29	41° 2' 0.7	24° 61' 0.28	25° 5' 0.4
18	58° 34' 0.30	17° 3' 0.0	6° 81' 0.31	40° 5' 0.2	24° 89' 0.29	25° 1' 0.1
28	58° 64' 0.30	17° 3' 0.5	7° 12' 0.32	40° 3' 0.4	25° 18' 0.30	25° 0' 0.4
Oct. 8	58° 94' 0.30	17° 8' 0.9	7° 44' 0.32	40° 7' 0.9	25° 48' 0.31	25° 4' 0.9
18	59° 24' 0.30	18° 7' 1.3	7° 76' 0.32	41° 6' 1.3	25° 79' 0.30	26° 3' 1.2
28	59° 54' 0.28	20° 0' 1.8	8° 08' 0.30	42° 9' 1.9	26° 09' 0.30	27° 5' 1.6
Nov. 7	59° 82' 0.27	21° 8' 2.0	8° 38' 0.29	44° 8' 2.3	26° 39' 0.28	29° 1' 2.0
17	60° 09' 0.25	23° 8' 2.3	8° 67' 0.27	47° 7' 2.6	26° 67' 0.26	31° 1' 2.2
27	60° 34' 0.22	26° 1' 2.4	8° 94' 0.23	49° 7' 2.8	26° 93' 0.23	33° 3' 2.4
Dec. 7	60° 56' 0.18	28° 5' 2.6	9° 17' 0.19	52° 5' 3.0	27° 16' 0.20	35° 7' 2.5
17	60° 74' 0.13	31° 1' 2.5	9° 36' 0.15	55° 5' 3.1	27° 36' 0.16	38° 2' 2.5
27	60° 87' 0.10	33° 6' 2.5	9° 57' 0.09	58° 6' 3.0	27° 52' 0.12	40° 7' 2.4
37	60° 97' 0.10	36° 1' 2.5	9° 60' 0.09	61° 6' 3.0	27° 64' 0.12	43° 1' 2.4

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	♌ Geminorum.			♊ Geminorum. (Castor)			♋ Canis Minoris. (Procyon)		
	R. A.	Dec. North.		R. A.	Dec. North.		R. A.	Dec. North.	
	^h 7	^m 11	[°] 22 ['] 14	^h 7	^m 25	[°] 32 ['] 11	^h 7	^m 31	[°] 5 ['] 34
Jan. 1	44° 10' 0.13	20° 7' 0.2	38° 23' 0.16	39° 0' 0.4	56° 99' 0.14	63° 8' 1.3			
11	44° 23' 0.09	20° 5' 0.0	38° 39' 0.11	39° 4' 0.5	57° 13' 0.09	62° 5' 1.0			
21	44° 32' 0.03	20° 5' 0.1	38° 50' 0.05	39° 9' 0.7	57° 22' 0.04	61° 4' 1.0			
31	44° 35' 0.02	20° 6' 0.1	38° 55' 0.01	40° 6' 0.7	57° 26' 0.01	60° 4' 0.8			
Feb. 10	44° 33' 0.07	20° 7' 0.3	38° 54' 0.07	41° 3' 0.7	57° 25' 0.06	59° 6' 0.6			
20	44° 26' 0.11	21° 0' 0.2	38° 47' 0.11	42° 0' 0.8	57° 19' 0.09	59° 0' 0.5			
Mar. 2	44° 15' 0.14	21° 2' 0.3	38° 36' 0.15	42° 8' 0.6	57° 10' 0.12	58° 5' 0.3			
12	44° 01' 0.16	21° 5' 0.3	38° 21' 0.17	43° 4' 0.5	56° 98' 0.15	58° 2' 0.1			
Apr. 22	43° 85' 0.17	21° 8' 0.2	38° 04' 0.18	43° 9' 0.4	56° 83' 0.16	58° 1' 0.0			
1	43° 68' 0.17	22° 0' 0.1	37° 86' 0.19	44° 3' 0.2	56° 67' 0.16	58° 1' 0.1			
11	43° 51' 0.16	22° 1' 0.1	37° 67' 0.18	44° 5' 0.0	56° 51' 0.15	58° 2' 0.2			
21	43° 35' 0.14	22° 2' 0.0	37° 49' 0.15	44° 5' 0.0	56° 36' 0.13	58° 4' 0.3			
May 1	43° 21' 0.11	22° 2' 0.1	37° 34' 0.13	44° 5' 0.2	56° 23' 0.12	58° 7' 0.4			
11	43° 10' 0.07	22° 1' 0.1	37° 21' 0.10	44° 3' 0.4	56° 11' 0.09	59° 1' 0.5			
21	43° 03' 0.04	22° 0' 0.1	37° 11' 0.05	43° 9' 0.5	56° 02' 0.05	59° 6' 0.5			
31	42° 99' 0.00	21° 9' 0.2	37° 06' 0.02	43° 4' 0.7	55° 97' 0.02	60° 1' 0.6			
June 10	42° 99' 0.04	21° 7' 0.1	37° 04' 0.03	42° 7' 0.7	55° 95' 0.02	60° 7' 0.7			
20	43° 03' 0.09	21° 6' 0.2	37° 07' 0.07	42° 0' 0.7	55° 97' 0.05	61° 4' 0.8			
30	43° 12' 0.13	21° 4' 0.0	37° 14' 0.11	41° 3' 0.8	56° 02' 0.09	62° 2' 0.6			
July 10	43° 25' 0.15	21° 4' 0.2	37° 25' 0.17	40° 5' 0.9	56° 11' 0.13	62° 8' 0.8			
20	43° 40' 0.19	21° 2' 0.2	37° 42' 0.19	39° 6' 0.8	56° 24' 0.14	63° 6' 0.6			
30	43° 59' 0.22	21° 0' 0.2	37° 61' 0.22	38° 8' 0.9	56° 38' 0.18	64° 2' 0.6			
Aug. 9	43° 81' 0.24	20° 8' 0.3	37° 83' 0.25	37° 9' 0.8	56° 56' 0.21	64° 8' 0.4			
19	44° 05' 0.27	20° 5' 0.4	38° 08' 0.28	37° 1' 0.9	56° 77' 0.23	65° 2' 0.3			
Sept. 29	44° 32' 0.28	20° 1' 0.4	38° 36' 0.30	36° 2' 0.9	57° 00' 0.24	65° 5' 0.0			
8	44° 60' 0.30	19° 7' 0.5	38° 66' 0.32	35° 3' 0.9	57° 24' 0.27	65° 5' 0.1			
18	44° 90' 0.31	19° 2' 0.6	38° 98' 0.34	34° 4' 0.8	57° 51' 0.28	65° 4' 0.4			
28	45° 21' 0.33	18° 6' 0.7	39° 32' 0.35	33° 6' 0.9	57° 79' 0.30	65° 0' 0.6			
Oct. 8	45° 54' 0.33	17° 9' 0.7	39° 67' 0.36	32° 7' 0.9	58° 09' 0.30	64° 4' 0.9			
18	45° 87' 0.34	17° 2' 0.8	40° 03' 0.36	31° 8' 0.7	58° 39' 0.31	63° 5' 1.1			
28	46° 21' 0.33	16° 4' 0.8	40° 39' 0.37	31° 1' 0.7	58° 70' 0.31	62° 4' 1.3			
Nov. 7	46° 54' 0.32	15° 6' 0.8	40° 76' 0.35	30° 4' 0.6	59° 01' 0.31	61° 1' 1.5			
17	46° 86' 0.31	14° 8' 0.8	41° 11' 0.34	29° 8' 0.4	59° 32' 0.29	59° 6' 1.6			
27	47° 17' 0.28	14° 0' 0.6	41° 45' 0.32	29° 4' 0.3	59° 61' 0.27	58° 0' 1.6			
Dec. 7	47° 45' 0.25	13° 4' 0.6	41° 77' 0.28	29° 1' 0.1	59° 88' 0.24	56° 4' 1.6			
17	47° 70' 0.21	12° 8' 0.4	42° 05' 0.24	29° 0' 0.1	60° 12' 0.21	54° 8' 1.5			
27	47° 91' 0.16	12° 4' 0.3	42° 29' 0.19	29° 1' 0.3	60° 33' 0.16	53° 3' 1.4			
37	48° 07' 0.16	12° 1' 0.3	42° 48' 0.19	29° 4' 0.3	60° 49' 0.16	51° 9' 1.4			

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	β Geminorum. (Pollux)		6 Cancr.		15 Argus.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. South.
	^h 7	^m 36	^h 7	^m 54	^h 8	^m 1
	^s 21	^s 28	^s 47	^s 10	^s 09	^s 23
Jan. 1	43° 21' 0" 17	48° 6' 0" 1	53° 47' 0" 19	70° 9' 0" 0	34° 09' 0" 15	54° 7' 0" 9
11	43° 38' 0" 11	48° 7' 0" 3	53° 66' 0" 13	70° 9' 0" 2	34° 24' 0" 10	57° 6' 0" 8
21	43° 49' 0" 06	49° 0' 0" 5	53° 79' 0" 08	71° 1' 0" 4	34° 34' 0" 04	60° 4' 0" 6
31	43° 55' 0" 01	49° 5' 0" 5	53° 87' 0" 02	71° 5' 0" 6	34° 38' 0" 00	63° 0' 0" 4
Feb. 10	43° 54' 0" 05	50° 0' 0" 5	53° 89' 0" 03	72° 1' 0" 5	34° 38' 0" 06	65° 4' 0" 2
20	43° 49' 0" 09	50° 5' 0" 6	53° 86' 0" 08	72° 6' 0" 7	34° 32' 0" 10	67° 6' 0" 8
Mar. 2	43° 40' 0" 14	51° 1' 0" 6	53° 78' 0" 12	73° 3' 0" 6	34° 22' 0" 13	69° 4' 0" 4
12	43° 26' 0" 16	51° 7' 0" 5	53° 66' 0" 15	73° 9' 0" 6	34° 09' 0" 16	70° 8' 0" 1
22	43° 10' 0" 17	52° 2' 0" 4	53° 51' 0" 17	74° 5' 0" 5	33° 93' 0" 18	71° 9' 0" 8
Apr. 1	42° 93' 0" 18	52° 6' 0" 3	53° 34' 0" 17	75° 0' 0" 4	33° 75' 0" 18	72° 7' 0" 3
11	42° 75' 0" 17	52° 9' 0" 2	53° 17' 0" 17	75° 4' 0" 2	33° 57' 0" 19	73° 0' 0" 0
21	42° 58' 0" 16	53° 1' 0" 0	53° 00' 0" 16	75° 6' 0" 1	33° 38' 0" 17	73° 0' 0" 3
May 1	42° 42' 0" 12	53° 1' 0" 1	52° 84' 0" 13	75° 7' 0" 0	33° 21' 0" 15	72° 7' 0" 7
11	42° 30' 0" 10	53° 0' 0" 3	52° 71' 0" 11	75° 7' 0" 1	33° 06' 0" 13	72° 0' 0" 0
21	42° 20' 0" 06	52° 7' 0" 3	52° 60' 0" 07	75° 6' 0" 3	32° 93' 0" 11	71° 0' 0" 3
31	42° 14' 0" 02	52° 4' 0" 4	52° 53' 0" 04	75° 3' 0" 4	32° 82' 0" 07	69° 7' 0" 6
June 10	42° 12' 0" 01	52° 0' 0" 5	52° 49' 0" 01	74° 9' 0" 4	32° 75' 0" 04	68° 1' 0" 8
20	42° 13' 0" 06	51° 5' 0" 5	52° 50' 0" 04	74° 5' 0" 6	32° 71' 0" 00	66° 3' 0" 9
30	42° 19' 0" 10	51° 0' 0" 6	52° 54' 0" 07	73° 9' 0" 6	32° 71' 0" 03	64° 4' 0" 1
July 10	42° 29' 0" 15	50° 4' 0" 7	52° 61' 0" 13	73° 3' 0" 7	32° 74' 0" 07	62° 3' 0" 1
20	42° 44' 0" 17	49° 7' 0" 7	52° 74' 0" 15	72° 6' 0" 7	32° 81' 0" 11	60° 2' 0" 3
30	42° 61' 0" 20	49° 0' 0" 7	52° 89' 0" 19	71° 9' 0" 8	32° 92' 0" 13	57° 9' 0" 0
Aug. 9	42° 81' 0" 23	48° 3' 0" 7	53° 08' 0" 21	71° 1' 0" 8	33° 05' 0" 17	55° 9' 0" 8
19	43° 04' 0" 25	47° 6' 0" 8	53° 29' 0" 24	70° 3' 0" 9	33° 22' 0" 20	54° 1' 0" 6
29	43° 29' 0" 28	46° 8' 0" 8	53° 53' 0" 27	69° 4' 0" 10	33° 42' 0" 22	52° 5' 0" 2
Sept. 8	43° 57' 0" 30	46° 0' 0" 9	53° 80' 0" 29	68° 4' 0" 10	33° 64' 0" 25	51° 3' 0" 9
18	43° 87' 0" 32	45° 1' 0" 9	54° 09' 0" 31	67° 4' 0" 10	33° 89' 0" 28	50° 4' 0" 4
28	44° 19' 0" 34	44° 2' 0" 9	54° 40' 0" 32	66° 4' 0" 11	34° 17' 0" 30	50° 0' 0" 0
Oct. 8	44° 53' 0" 34	43° 3' 0" 10	54° 72' 0" 34	65° 3' 0" 11	34° 47' 0" 31	50° 0' 0" 6
18	44° 87' 0" 35	42° 3' 0" 9	55° 06' 0" 36	64° 2' 0" 11	34° 78' 0" 32	50° 6' 0" 0
28	45° 22' 0" 36	41° 4' 0" 8	55° 42' 0" 35	63° 1' 0" 10	35° 10' 0" 32	51° 6' 0" 6
Nov. 7	45° 58' 0" 35	40° 6' 0" 8	55° 77' 0" 36	62° 1' 0" 10	35° 42' 0" 32	53° 2' 0" 9
17	45° 93' 0" 33	39° 8' 0" 7	56° 13' 0" 34	61° 1' 0" 9	35° 74' 0" 31	55° 1' 0" 3
27	46° 26' 0" 31	39° 1' 0" 6	56° 47' 0" 33	60° 2' 0" 6	36° 05' 0" 29	57° 4' 0" 6
Dec. 7	46° 57' 0" 28	38° 5' 0" 3	56° 80' 0" 29	59° 6' 0" 5	36° 34' 0" 25	60° 0' 0" 8
17	46° 85' 0" 24	38° 2' 0" 2	57° 09' 0" 26	59° 1' 0" 3	36° 59' 0" 22	62° 8' 0" 9
27	47° 09' 0" 19	38° 0' 0" 0	57° 35' 0" 22	58° 8' 0" 1	36° 81' 0" 17	65° 7' 0" 3
37	47° 28' 0" 15	38° 0' 0" 0	57° 57' 0" 15	58° 7' 0" 1	36° 98' 0" 12	68° 7' 0" 0

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	η Cancr.		ϵ Hydræ.		ι Ursæ Majoris.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 8	^m 24	^h 8	^m 39	^h 8	^m 49
	[°] 20	['] 54	^h 6	^m 55	^h 48	^m 35
Jan. 1	34° 98' 0.21	60° 9' 0.6	20° 18' 0.20	61° 5' 1.5	34° 90' 0.30	25° 7' 0.9
11	35° 19' 0.16	60° 3' 0.6	20° 38' 0.16	60° 0' 1.2	35° 20' 0.23	26° 6' 1.2
21	35° 35' 0.10	60° 0' 0.3	20° 54' 0.11	58° 8' 1.1	35° 43' 0.16	27° 8' 1.5
31	35° 45' 0.05	59° 9' 0.0	20° 65' 0.06	57° 7' 0.8	35° 59' 0.09	29° 3' 1.6
Feb. 10	35° 50' 0.00	59° 9' 0.2	20° 71' 0.01	56° 9' 0.6	35° 68' 0.02	30° 9' 1.8
20	35° 50' 0.05	60° 1' 0.4	20° 72' 0.04	56° 3' 0.4	35° 70' 0.06	32° 7' 1.7
Mar. 2	35° 45' 0.09	60° 5' 0.4	20° 68' 0.08	55° 9' 0.2	35° 64' 0.11	34° 4' 1.7
12	35° 36' 0.12	60° 9' 0.4	20° 60' 0.10	55° 7' 0.1	35° 53' 0.16	36° 1' 1.5
22	35° 24' 0.15	61° 3' 0.5	20° 50' 0.13	55° 6' 0.0	35° 37' 0.20	37° 6' 1.3
Apr. 1	35° 09' 0.15	61° 8' 0.4	20° 37' 0.14	55° 6' 0.2	35° 17' 0.22	38° 9' 1.0
11	34° 94' 0.15	62° 2' 0.4	20° 23' 0.14	55° 8' 0.2	34° 95' 0.24	39° 9' 0.7
21	34° 79' 0.15	62° 6' 0.3	20° 09' 0.14	56° 0' 0.4	34° 71' 0.23	40° 6' 0.4
May 1	34° 64' 0.14	62° 9' 0.2	19° 95' 0.13	56° 4' 0.4	34° 48' 0.22	41° 0' 0.1
11	34° 50' 0.11	63° 1' 0.1	19° 82' 0.11	56° 8' 0.4	34° 26' 0.20	41° 1' 0.3
21	34° 39' 0.08	63° 2' 0.1	19° 71' 0.08	57° 2' 0.4	34° 06' 0.16	40° 8' 0.7
31	34° 31' 0.05	63° 5' 0.0	19° 63' 0.06	57° 6' 0.5	33° 90' 0.13	40° 1' 0.9
June 10	34° 26' 0.02	63° 3' 0.1	19° 57' 0.03	58° 1' 0.5	33° 77' 0.08	39° 2' 1.3
20	34° 24' 0.01	63° 2' 0.1	19° 54' 0.01	58° 6' 0.6	33° 69' 0.04	37° 9' 1.5
30	34° 25' 0.05	63° 1' 0.2	19° 53' 0.03	59° 2' 0.5	33° 65' 0.01	36° 4' 1.6
July 10	34° 30' 0.08	62° 9' 0.3	19° 56' 0.06	59° 7' 0.5	33° 66' 0.05	34° 8' 1.9
20	34° 38' 0.12	62° 6' 0.5	19° 62' 0.09	60° 2' 0.4	33° 71' 0.10	32° 9' 2.0
30	34° 50' 0.14	62° 1' 0.4	19° 72' 0.11	60° 6' 0.3	33° 81' 0.16	30° 9' 2.3
Aug. 9	34° 64' 0.17	61° 7' 0.6	19° 83' 0.15	60° 9' 0.2	33° 97' 0.19	28° 6' 2.2
19	34° 81' 0.21	61° 1' 0.7	19° 98' 0.17	61° 1' 0.0	34° 16' 0.24	26° 4' 2.2
29	35° 02' 0.22	60° 4' 0.8	20° 15' 0.20	61° 1' 0.1	34° 40' 0.27	24° 2' 2.2
Sept. 8	35° 24' 0.25	59° 6' 0.9	20° 35' 0.22	61° 0' 0.4	34° 67' 0.31	22° 0' 2.1
18	35° 49' 0.28	58° 7' 1.0	20° 57' 0.25	60° 6' 0.6	34° 98' 0.35	19° 9' 2.1
28	35° 77' 0.30	57° 7' 1.2	20° 82' 0.27	60° 0' 0.9	35° 33' 0.37	17° 8' 2.0
Oct. 8	36° 07' 0.31	56° 5' 1.2	21° 09' 0.29	59° 1' 1.0	35° 70' 0.41	15° 8' 1.8
18	36° 38' 0.33	55° 3' 1.3	21° 38' 0.31	58° 1' 1.3	36° 11' 0.43	14° 0' 1.6
28	36° 71' 0.34	54° 0' 1.4	21° 69' 0.32	56° 8' 1.5	36° 54' 0.45	12° 4' 1.4
Nov. 7	37° 05' 0.34	52° 6' 1.4	22° 01' 0.32	55° 3' 1.6	36° 99' 0.46	11° 0' 1.1
17	37° 39' 0.34	51° 2' 1.3	22° 33' 0.33	53° 7' 1.7	37° 45' 0.46	9° 9' 0.8
27	37° 73' 0.33	49° 9' 1.1	22° 66' 0.31	52° 0' 1.8	37° 91' 0.44	9° 1' 0.4
Dec. 7	38° 06' 0.30	48° 8' 1.1	22° 97' 0.29	50° 2' 1.7	38° 35' 0.42	8° 7' 0.0
17	38° 36' 0.27	47° 7' 0.9	23° 26' 0.26	48° 5' 1.7	38° 77' 0.38	8° 7' 0.3
27	38° 63' 0.23	46° 8' 0.7	23° 52' 0.23	46° 8' 1.5	39° 15' 0.33	9° 0' 0.7
37	38° 86' 0.23	46° 1' 0.7	23° 75' 0.23	45° 3' 1.5	39° 48' 0.33	9° 7' 0.7

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	83 Cancr.		ι Argus.		α Hydræ.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. South.
	^h 9 ^m 11	[°] 18 ['] 17	^h 9 ^m 13	[°] 58 ['] 40	^h 9 ^m 20	[°] 8 ['] 2
Jan. 1	8.15 ^s	59.6 ["]	20.64 ^s	50.5 ["]	40.95 ^s	55.8 ["]
11	8.40 ^s	58.7 ["]	20.92 ^s	54.2 ["]	41.19 ^s	58.1 ["]
21	8.59 ^s	58.0 ["]	21.11 ^s	58.1 ["]	41.37 ^s	60.3 ["]
31	8.74 ^s	57.6 ["]	21.22 ^s	61.9 ["]	41.51 ^s	62.3 ["]
Feb. 10	8.84 ^s	57.4 ["]	21.25 ^s	65.7 ["]	41.60 ^s	64.2 ["]
20	8.88 ^s	57.4 ["]	21.20 ^s	69.4 ["]	41.64 ^s	65.7 ["]
Mar. 2	8.87 ^s	57.7 ["]	21.07 ^s	72.8 ["]	41.64 ^s	67.1 ["]
12	8.82 ^s	58.0 ["]	20.88 ^s	75.9 ["]	41.59 ^s	68.1 ["]
22	8.74 ^s	58.5 ["]	20.63 ^s	78.6 ["]	41.51 ^s	69.0 ["]
Apr. 1	8.63 ^s	58.9 ["]	20.34 ^s	80.9 ["]	41.41 ^s	69.5 ["]
11	8.50 ^s	59.5 ["]	20.02 ^s	82.8 ["]	41.28 ^s	69.8 ["]
21	8.35 ^s	60.0 ["]	19.67 ^s	84.2 ["]	41.15 ^s	69.9 ["]
May 1	8.21 ^s	60.4 ["]	19.31 ^s	85.0 ["]	41.02 ^s	69.8 ["]
11	8.08 ^s	60.9 ["]	18.96 ^s	85.4 ["]	40.89 ^s	69.5 ["]
21	7.96 ^s	61.2 ["]	18.62 ^s	85.2 ["]	40.77 ^s	69.0 ["]
31	7.86 ^s	61.4 ["]	18.30 ^s	84.5 ["]	40.66 ^s	68.4 ["]
June 10	7.78 ^s	61.6 ["]	18.00 ^s	83.3 ["]	40.58 ^s	67.6 ["]
20	7.73 ^s	61.7 ["]	17.74 ^s	81.8 ["]	40.52 ^s	66.7 ["]
30	7.71 ^s	61.7 ["]	17.52 ^s	79.8 ["]	40.48 ^s	65.6 ["]
July 10	7.71 ^s	61.6 ["]	17.35 ^s	77.4 ["]	40.46 ^s	64.5 ["]
20	7.74 ^s	61.4 ["]	17.24 ^s	74.8 ["]	40.47 ^s	63.4 ["]
30	7.81 ^s	61.1 ["]	17.19 ^s	72.0 ["]	40.51 ^s	62.3 ["]
Aug. 9	7.91 ^s	60.6 ["]	17.20 ^s	68.7 ["]	40.58 ^s	61.2 ["]
19	8.03 ^s	60.0 ["]	17.28 ^s	65.8 ["]	40.68 ^s	60.2 ["]
29	8.18 ^s	59.3 ["]	17.42 ^s	63.0 ["]	40.81 ^s	59.4 ["]
Sept. 8	8.36 ^s	58.4 ["]	17.64 ^s	60.4 ["]	40.97 ^s	58.8 ["]
18	8.57 ^s	57.4 ["]	17.92 ^s	58.2 ["]	41.15 ^s	58.5 ["]
28	8.80 ^s	56.2 ["]	18.26 ^s	56.4 ["]	41.37 ^s	58.5 ["]
Oct. 8	9.06 ^s	54.9 ["]	18.65 ^s	55.0 ["]	41.61 ^s	58.9 ["]
18	9.35 ^s	53.4 ["]	19.09 ^s	54.2 ["]	41.88 ^s	59.6 ["]
28	9.67 ^s	51.9 ["]	19.57 ^s	54.1 ["]	42.17 ^s	60.7 ["]
Nov. 7	10.00 ^s	50.2 ["]	20.07 ^s	54.7 ["]	42.48 ^s	62.1 ["]
17	10.33 ^s	48.5 ["]	20.58 ^s	55.8 ["]	42.81 ^s	63.7 ["]
27	10.68 ^s	46.9 ["]	21.08 ^s	57.6 ["]	43.14 ^s	65.7 ["]
Dec. 7	11.02 ^s	45.3 ["]	21.55 ^s	60.0 ["]	43.46 ^s	67.9 ["]
17	11.34 ^s	43.9 ["]	21.98 ^s	62.9 ["]	43.76 ^s	70.2 ["]
27	11.64 ^s	42.6 ["]	22.36 ^s	66.2 ["]	44.05 ^s	72.5 ["]
37	11.90 ^s	41.6 ["]	22.68 ^s	69.8 ["]	44.30 ^s	74.9 ["]

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	θ Ursæ Majoris.			ε Leonis.			π Leonis.					
	R. A.	Dec. North.		R. A.	Dec. North.		R. A.	Dec. North.				
	^h 9	^m 23	[°] 52	['] 18	^h 9	^m 37	[°] 24	['] 24	^h 9	^m 52	[°] 8	['] 42
Jan. I	27 ^s 12	0 ^s 36	53 ^s 0	0 ^s 8	52 ^s 30	0 ^s 28	71 ^s 4	0 ^s 8	47 ^s 10	0 ^s 27	65 ^s 2	1 ^s 5
II	27 ^s 48	0 ^s 29	53 ^s 8	1 ^s 2	52 ^s 58	0 ^s 23	70 ^s 6	0 ^s 4	47 ^s 37	0 ^s 22	63 ^s 7	1 ^s 4
21	27 ^s 77	0 ^s 22	55 ^s 0	1 ^s 5	52 ^s 81	0 ^s 18	70 ^s 2	0 ^s 1	47 ^s 59	0 ^s 18	62 ^s 3	1 ^s 1
31	27 ^s 99	0 ^s 14	56 ^s 5	1 ^s 8	52 ^s 99	0 ^s 13	70 ^s 1	0 ^s 1	47 ^s 77	0 ^s 14	61 ^s 2	0 ^s 9
Feb. 10	28 ^s 13	0 ^s 06	58 ^s 3	1 ^s 9	53 ^s 12	0 ^s 08	70 ^s 2	0 ^s 4	47 ^s 91	0 ^s 08	60 ^s 3	0 ^s 7
20	28 ^s 19	0 ^s 01	60 ^s 2	2 ^s 0	53 ^s 20	0 ^s 02	70 ^s 6	0 ^s 6	47 ^s 99	0 ^s 03	59 ^s 6	0 ^s 3
Mar. 2	28 ^s 18	0 ^s 08	62 ^s 2	2 ^s 0	53 ^s 22	0 ^s 03	71 ^s 2	0 ^s 7	48 ^s 02	0 ^s 01	59 ^s 3	0 ^s 2
12	28 ^s 10	0 ^s 15	64 ^s 2	1 ^s 8	53 ^s 19	0 ^s 07	71 ^s 9	0 ^s 8	48 ^s 01	0 ^s 05	59 ^s 1	0 ^s 0
22	27 ^s 95	0 ^s 19	66 ^s 0	1 ^s 7	53 ^s 12	0 ^s 10	72 ^s 7	0 ^s 8	47 ^s 96	0 ^s 08	59 ^s 1	0 ^s 2
Apr. I	27 ^s 76	0 ^s 22	67 ^s 7	1 ^s 3	53 ^s 02	0 ^s 12	73 ^s 5	0 ^s 8	47 ^s 88	0 ^s 10	59 ^s 3	0 ^s 3
11	27 ^s 54	0 ^s 25	69 ^s 0	1 ^s 1	52 ^s 90	0 ^s 14	74 ^s 3	0 ^s 8	47 ^s 78	0 ^s 11	59 ^s 6	0 ^s 3
21	27 ^s 29	0 ^s 26	70 ^s 1	0 ^s 7	52 ^s 76	0 ^s 14	75 ^s 1	0 ^s 6	47 ^s 67	0 ^s 12	59 ^s 9	0 ^s 5
May I	27 ^s 03	0 ^s 24	70 ^s 8	0 ^s 3	52 ^s 62	0 ^s 14	75 ^s 7	0 ^s 5	47 ^s 55	0 ^s 12	60 ^s 4	0 ^s 4
11	26 ^s 79	0 ^s 24	71 ^s 1	0 ^s 0	52 ^s 48	0 ^s 13	76 ^s 2	0 ^s 4	47 ^s 43	0 ^s 12	60 ^s 8	0 ^s 5
21	26 ^s 55	0 ^s 21	71 ^s 1	0 ^s 5	52 ^s 35	0 ^s 11	76 ^s 6	0 ^s 3	47 ^s 31	0 ^s 10	61 ^s 3	0 ^s 5
31	26 ^s 34	0 ^s 17	70 ^s 6	0 ^s 8	52 ^s 24	0 ^s 10	76 ^s 9	0 ^s 1	47 ^s 21	0 ^s 09	61 ^s 8	0 ^s 4
June 10	26 ^s 17	0 ^s 14	69 ^s 8	1 ^s 2	52 ^s 14	0 ^s 07	77 ^s 0	0 ^s 1	47 ^s 12	0 ^s 07	62 ^s 2	0 ^s 5
20	26 ^s 03	0 ^s 09	68 ^s 6	1 ^s 5	52 ^s 07	0 ^s 05	76 ^s 9	0 ^s 2	47 ^s 05	0 ^s 05	62 ^s 7	0 ^s 4
30	25 ^s 94	0 ^s 05	67 ^s 1	1 ^s 7	52 ^s 02	0 ^s 02	76 ^s 7	0 ^s 4	47 ^s 00	0 ^s 03	63 ^s 1	0 ^s 3
July 10	25 ^s 89	0 ^s 01	65 ^s 4	2 ^s 0	52 ^s 00	0 ^s 01	76 ^s 3	0 ^s 5	46 ^s 97	0 ^s 00	63 ^s 4	0 ^s 1
20	25 ^s 88	0 ^s 05	63 ^s 4	2 ^s 2	52 ^s 01	0 ^s 04	75 ^s 8	0 ^s 7	46 ^s 97	0 ^s 02	63 ^s 5	0 ^s 3
30	25 ^s 93	0 ^s 09	61 ^s 2	2 ^s 4	52 ^s 05	0 ^s 06	75 ^s 1	0 ^s 9	46 ^s 99	0 ^s 04	63 ^s 8	0 ^s 1
Aug. 9	26 ^s 02	0 ^s 16	58 ^s 8	2 ^s 7	52 ^s 11	0 ^s 10	74 ^s 2	1 ^s 0	47 ^s 03	0 ^s 07	63 ^s 9	0 ^s 1
19	26 ^s 18	0 ^s 19	56 ^s 1	2 ^s 5	52 ^s 21	0 ^s 14	73 ^s 2	1 ^s 2	{47 ^s 11}	{0 ^s 11}	{63 ^s 11}	{0 ^s 2}
29	26 ^s 37	0 ^s 23	53 ^s 6	2 ^s 6	52 ^s 35	0 ^s 16	72 ^s 0	1 ^s 3	47 ^s 22	0 ^s 13	63 ^s 6	0 ^s 4
Sept. 8	26 ^s 60	0 ^s 28	51 ^s 0	2 ^s 6	52 ^s 51	0 ^s 19	70 ^s 7	1 ^s 4	47 ^s 35	0 ^s 16	63 ^s 2	0 ^s 7
18	26 ^s 88	0 ^s 32	48 ^s 4	2 ^s 5	52 ^s 70	0 ^s 22	69 ^s 3	1 ^s 6	47 ^s 51	0 ^s 19	62 ^s 5	0 ^s 8
28	27 ^s 20	0 ^s 37	45 ^s 9	2 ^s 4	52 ^s 92	0 ^s 25	67 ^s 7	1 ^s 6	47 ^s 70	0 ^s 22	61 ^s 7	1 ^s 1
Oct. 8	27 ^s 57	0 ^s 41	43 ^s 5	2 ^s 2	53 ^s 17	0 ^s 28	66 ^s 1	1 ^s 8	47 ^s 92	0 ^s 26	60 ^s 6	1 ^s 3
18	27 ^s 98	0 ^s 43	41 ^s 3	2 ^s 1	53 ^s 45	0 ^s 31	64 ^s 3	1 ^s 8	48 ^s 18	0 ^s 28	59 ^s 3	1 ^s 6
28	28 ^s 41	0 ^s 46	39 ^s 2	1 ^s 8	53 ^s 76	0 ^s 33	62 ^s 5	1 ^s 9	48 ^s 46	0 ^s 30	57 ^s 7	1 ^s 7
Nov. 7	28 ^s 87	0 ^s 48	37 ^s 4	1 ^s 4	54 ^s 09	0 ^s 35	60 ^s 6	1 ^s 7	48 ^s 76	0 ^s 33	56 ^s 0	1 ^s 8
17	29 ^s 35	0 ^s 49	36 ^s 0	1 ^s 1	54 ^s 44	0 ^s 36	58 ^s 9	1 ^s 8	49 ^s 09	0 ^s 33	54 ^s 2	1 ^s 9
27	29 ^s 84	0 ^s 49	34 ^s 9	0 ^s 7	54 ^s 80	0 ^s 36	57 ^s 1	1 ^s 6	49 ^s 42	0 ^s 34	52 ^s 3	2 ^s 0
Dec. 7	30 ^s 33	0 ^s 46	34 ^s 2	0 ^s 3	55 ^s 16	0 ^s 34	55 ^s 5	1 ^s 4	49 ^s 76	0 ^s 33	50 ^s 3	1 ^s 9
17	30 ^s 79	0 ^s 43	33 ^s 9	0 ^s 2	55 ^s 50	0 ^s 32	54 ^s 1	1 ^s 1	50 ^s 09	0 ^s 31	48 ^s 4	1 ^s 8
27	31 ^s 22	0 ^s 39	34 ^s 1	0 ^s 6	55 ^s 82	0 ^s 30	53 ^s 0	0 ^s 9	50 ^s 40	0 ^s 28	46 ^s 6	1 ^s 7
37	31 ^s 61		34 ^s 7		56 ^s 12		52 ^s 1		50 ^s 68		44 ^s 9	

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Leonis. (Regulus)		γ^1 Leonis.		ρ Leonis.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 10	^m 0	^h 10	^m 12	^h 10	^m 25
	[°] 12	['] 38	[°] 20	['] 32	[°] 10	['] 1
Jan. 1	53° 09'	0° 28'	13° 24'	0° 30'	24° 45'	0° 29'
11	53° 37'	0° 28'	13° 54'	0° 30'	24° 74'	0° 29'
21	53° 60'	0° 23'	13° 79'	0° 25'	24° 99'	0° 21'
31	53° 79'	0° 19'	14° 00'	0° 21'	25° 20'	0° 17'
Feb. 10	53° 93'	0° 14'	14° 16'	0° 16'	25° 37'	0° 17'
20	54° 03'	0° 10'	14° 27'	0° 11'	25° 48'	0° 11'
Mar. 2	54° 07'	0° 04'	14° 33'	0° 06'	25° 55'	0° 07'
12	54° 07'	0° 00'	14° 34'	0° 01'	25° 57'	0° 03'
22	54° 03'	0° 04'	14° 31'	0° 03'	25° 55'	0° 01'
Apr. 1	53° 96'	0° 07'	14° 24'	0° 07'	25° 50'	0° 05'
11	53° 86'	0° 10'	14° 14'	0° 10'	25° 43'	0° 07'
21	53° 74'	0° 12'	14° 03'	0° 11'	25° 33'	0° 10'
May 1	53° 62'	0° 12'	13° 91'	0° 12'	25° 22'	0° 11'
11	53° 50'	0° 12'	13° 79'	0° 12'	25° 11'	0° 11'
21	53° 38'	0° 10'	13° 66'	0° 13'	25° 00'	0° 10'
31	53° 28'	0° 10'	13° 55'	0° 11'	24° 90'	0° 10'
June 10	53° 18'	0° 10'	13° 45'	0° 10'	24° 80'	0° 10'
20	53° 11'	0° 07'	13° 36'	0° 09'	24° 72'	0° 08'
30	53° 05'	0° 06'	13° 30'	0° 06'	24° 65'	0° 07'
July 10	53° 02'	0° 03'	13° 25'	0° 05'	24° 60'	0° 05'
20	53° 01'	0° 01'	13° 23'	0° 02'	24° 57'	0° 03'
30	53° 02'	0° 01'	13° 24'	0° 01'	24° 57'	0° 00'
Aug. 9	53° 06'	0° 04'	13° 27'	0° 03'	24° 58'	0° 01'
19	53° 12'	0° 06'	13° 32'	0° 05'	24° 62'	0° 04'
29	53° 23'	0° 11'	13° 42'	0° 10'	24° 70'	0° 08'
Sept. 8	53° 35'	0° 12'	13° 54'	0° 12'	24° 80'	0° 10'
18	53° 51'	0° 16'	13° 69'	0° 15'	24° 93'	0° 13'
28	53° 70'	0° 19'	13° 87'	0° 18'	25° 09'	0° 16'
Oct. 8	53° 92'	0° 22'	14° 09'	0° 22'	25° 29'	0° 20'
18	54° 16'	0° 24'	14° 34'	0° 25'	25° 52'	0° 23'
28	54° 44'	0° 28'	14° 62'	0° 28'	25° 78'	0° 26'
Nov. 7	54° 75'	0° 31'	14° 93'	0° 31'	26° 07'	0° 29'
17	55° 07'	0° 32'	15° 27'	0° 34'	26° 39'	0° 32'
27	55° 41'	0° 34'	15° 61'	0° 34'	26° 72'	0° 33'
Dec. 7	55° 75'	0° 33'	15° 97'	0° 36'	27° 06'	0° 34'
17	56° 08'	0° 32'	16° 32'	0° 35'	27° 40'	0° 34'
27	56° 40'	0° 29'	16° 65'	0° 33'	27° 72'	0° 32'
37	56° 69'	0° 29'	16° 96'	0° 31'	28° 02'	0° 30'

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	η Argus.		ι Leonis.		α Ursæ Majoris.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 10 ^m 39	[°] 58 ['] 56	^h 10 ^m 41	[°] 11 ['] 16	^h 10 ^m 55	[°] 62 ['] 30
Jan. I	36 ^s .91 ^s	22 ⁿ .9 ⁿ	51 ^s .88 ^s	79 ⁿ .4 ⁿ	2 ^s .60 ^s	21 ⁿ .9 ⁿ
II	37 ^s .33 ^s	22 ⁿ .0 ⁿ	52 ^s .18 ^s	77 ⁿ .8 ⁿ	3 ^s .15 ^s	22 ⁿ .2 ⁿ
21	37 ^s .69 ^s	29 ⁿ .5 ⁿ	52 ^s .45 ^s	76 ⁿ .4 ⁿ	3 ^s .64 ^s	23 ⁿ .1 ⁿ
31	37 ^s .98 ^s	33 ⁿ .2 ⁿ	52 ^s .67 ^s	75 ⁿ .2 ⁿ	4 ^s .06 ^s	24 ⁿ .5 ⁿ
	0 ^s .21 ^s	3 ⁿ .7 ⁿ	0 ^s .18 ^s	0 ⁿ .8 ⁿ	0 ^s .34 ^s	1 ⁿ .8 ⁿ
Feb. 10	38 ^s .19 ^s	36 ⁿ .9 ⁿ	52 ^s .85 ^s	74 ⁿ .4 ⁿ	4 ^s .40 ^s	26 ⁿ .3 ⁿ
20	38 ^s .32 ^s	40 ⁿ .7 ⁿ	52 ^s .99 ^s	73 ⁿ .9 ⁿ	4 ^s .64 ^s	28 ⁿ .5 ⁿ
Mar. 2	38 ^s .38 ^s	44 ⁿ .4 ⁿ	53 ^s .07 ^s	73 ⁿ .6 ⁿ	4 ^s .79 ^s	30 ⁿ .9 ⁿ
12	38 ^s .36 ^s	48 ⁿ .0 ⁿ	53 ^s .11 ^s	73 ⁿ .6 ⁿ	4 ^s .84 ^s	33 ⁿ .4 ⁿ
	0 ^s .08 ^s	3 ⁿ .4 ⁿ	0 ^s .00 ^s	0 ⁿ .1 ⁿ	0 ^s .04 ^s	2 ⁿ .6 ⁿ
Apr. 22	38 ^s .28 ^s	51 ⁿ .4 ⁿ	53 ^s .11 ^s	73 ⁿ .7 ⁿ	4 ^s .80 ^s	36 ⁿ .0 ⁿ
I	38 ^s .13 ^s	54 ⁿ .4 ⁿ	53 ^s .07 ^s	74 ⁿ .1 ⁿ	4 ^s .68 ^s	38 ⁿ .5 ⁿ
11	37 ^s .94 ^s	57 ⁿ .1 ⁿ	53 ^s .01 ^s	74 ⁿ .5 ⁿ	4 ^s .49 ^s	40 ⁿ .9 ⁿ
21	37 ^s .71 ^s	59 ⁿ .4 ⁿ	52 ^s .92 ^s	75 ⁿ .1 ⁿ	4 ^s .24 ^s	42 ⁿ .9 ⁿ
	0 ^s .27 ^s	1 ⁿ .9 ⁿ	0 ^s .10 ^s	0 ⁿ .6 ⁿ	0 ^s .30 ^s	1 ⁿ .7 ⁿ
May I	37 ^s .44 ^s	61 ⁿ .3 ⁿ	52 ^s .82 ^s	75 ⁿ .7 ⁿ	3 ^s .94 ^s	44 ⁿ .6 ⁿ
11	37 ^s .16 ^s	62 ⁿ .7 ⁿ	52 ^s .71 ^s	76 ⁿ .3 ⁿ	3 ^s .62 ^s	45 ⁿ .9 ⁿ
21	36 ^s .86 ^s	63 ⁿ .6 ⁿ	52 ^s .61 ^s	76 ⁿ .9 ⁿ	3 ^s .28 ^s	46 ⁿ .7 ⁿ
31	36 ^s .55 ^s	64 ⁿ .0 ⁿ	52 ^s .50 ^s	77 ⁿ .4 ⁿ	2 ^s .93 ^s	47 ⁿ .1 ⁿ
	0 ^s .31 ^s	0 ⁿ .0 ⁿ	0 ^s .10 ^s	0 ⁿ .6 ⁿ	0 ^s .33 ^s	0 ⁿ .1 ⁿ
June 10	36 ^s .24 ^s	64 ⁿ .0 ⁿ	52 ^s .40 ^s	78 ⁿ .0 ⁿ	2 ^s .60 ^s	47 ⁿ .0 ⁿ
20	35 ^s .95 ^s	63 ⁿ .4 ⁿ	52 ^s .31 ^s	78 ⁿ .4 ⁿ	2 ^s .29 ^s	46 ⁿ .4 ⁿ
30	35 ^s .67 ^s	62 ⁿ .3 ⁿ	52 ^s .24 ^s	78 ⁿ .7 ⁿ	2 ^s .01 ^s	45 ⁿ .3 ⁿ
July 10	35 ^s .42 ^s	60 ⁿ .8 ⁿ	52 ^s .18 ^s	79 ⁿ .0 ⁿ	1 ^s .77 ^s	43 ⁿ .8 ⁿ
	0 ^s .22 ^s	1 ⁿ .9 ⁿ	0 ^s .04 ^s	0 ⁿ .1 ⁿ	0 ^s .20 ^s	1 ⁿ .9 ⁿ
20	35 ^s .20 ^s	58 ⁿ .9 ⁿ	52 ^s .14 ^s	79 ⁿ .1 ⁿ	1 ^s .57 ^s	41 ⁿ .9 ⁿ
30	35 ^s .03 ^s	56 ⁿ .6 ⁿ	52 ^s .12 ^s	79 ⁿ .1 ⁿ	1 ^s .41 ^s	39 ⁿ .6 ⁿ
Aug. 9	34 ^s .90 ^s	54 ⁿ .1 ⁿ	52 ^s .12 ^s	79 ⁿ .0 ⁿ	1 ^s .31 ^s	37 ⁿ .0 ⁿ
19	34 ^s .83 ^s	51 ⁿ .5 ⁿ	52 ^s .14 ^s	78 ⁿ .8 ⁿ	1 ^s .27 ^s	34 ⁿ .1 ⁿ
	0 ^s .00 ^s	2 ⁿ .7 ⁿ	0 ^s .05 ^s	0 ⁿ .5 ⁿ	0 ^s .01 ^s	3 ⁿ .0 ⁿ
29	34 ^s .83 ^s	48 ⁿ .8 ⁿ	52 ^s .19 ^s	78 ⁿ .3 ⁿ	1 ^s .28 ^s	31 ⁿ .1 ⁿ
Sept. 8	34 ^s .90 ^s	45 ⁿ .9 ⁿ	52 ^s .28 ^s	77 ⁿ .6 ⁿ	1 ^s .37 ^s	27 ⁿ .5 ⁿ
18	35 ^s .04 ^s	43 ⁿ .3 ⁿ	52 ^s .40 ^s	76 ⁿ .7 ⁿ	1 ^s .52 ^s	24 ⁿ .1 ⁿ
28	35 ^s .26 ^s	40 ⁿ .9 ⁿ	52 ^s .55 ^s	75 ⁿ .7 ⁿ	1 ^s .74 ^s	20 ⁿ .7 ⁿ
	0 ^s .29 ^s	2 ⁿ .1 ⁿ	0 ^s .18 ^s	1 ⁿ .3 ⁿ	0 ^s .29 ^s	3 ⁿ .3 ⁿ
Oct. 8	35 ^s .55 ^s	38 ⁿ .8 ⁿ	52 ^s .73 ^s	74 ⁿ .4 ⁿ	2 ^s .03 ^s	17 ⁿ .4 ⁿ
18	35 ^s .90 ^s	37 ⁿ .2 ⁿ	52 ^s .95 ^s	72 ⁿ .8 ⁿ	2 ^s .39 ^s	14 ⁿ .1 ⁿ
28	36 ^s .32 ^s	36 ⁿ .1 ⁿ	53 ^s .20 ^s	71 ⁿ .1 ⁿ	2 ^s .81 ^s	11 ⁿ .0 ⁿ
Nov. 7	36 ^s .79 ^s	35 ⁿ .7 ⁿ	53 ^s .49 ^s	69 ⁿ .3 ⁿ	3 ^s .29 ^s	8 ⁿ .2 ⁿ
	0 ^s .50 ^s	0 ⁿ .1 ⁿ	0 ^s .30 ^s	2 ⁿ .0 ⁿ	0 ^s .53 ^s	2 ⁿ .5 ⁿ
17	37 ^s .29 ^s	35 ⁿ .8 ⁿ	53 ^s .79 ^s	67 ⁿ .3 ⁿ	3 ^s .82 ^s	5 ⁿ .7 ⁿ
27	37 ^s .82 ^s	36 ⁿ .6 ⁿ	54 ^s .12 ^s	65 ⁿ .2 ⁿ	4 ^s .39 ^s	3 ⁿ .6 ⁿ
Dec. 7	38 ^s .36 ^s	38 ⁿ .0 ⁿ	54 ^s .46 ^s	63 ⁿ .1 ⁿ	4 ^s .98 ^s	2 ⁿ .0 ⁿ
17	38 ^s .88 ^s	40 ⁿ .0 ⁿ	54 ^s .80 ^s	61 ⁿ .1 ⁿ	5 ^s .59 ^s	0 ⁿ .9 ⁿ
	0 ^s .49 ^s	2 ⁿ .5 ⁿ	0 ^s .33 ^s	2 ⁿ .0 ⁿ	0 ^s .60 ^s	0 ⁿ .5 ⁿ
27	39 ^s .37 ^s	42 ⁿ .5 ⁿ	55 ^s .13 ^s	59 ⁿ .1 ⁿ	6 ^s .19 ^s	0 ⁿ .4 ⁿ
37	39 ^s .83 ^s	45 ⁿ .4 ⁿ	55 ^s .45 ^s	57 ⁿ .4 ⁿ	6 ^s .76 ^s	0 ⁿ .4 ⁿ

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	♋ Leonis.		♌ Leonis.		♍ Hydræ et Crateris.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. South.
	^h 10 ^m 57	[°] 8 ['] 5	^h 11 ^m 6	[°] 21 ['] 17	^h 11 ^m 12	[°] 14 ['] 0
Jan. 1	45° 71' 0.31	45° 0' 1.8	37° 59' 0.33	33° 9' 1.3	18° 48' 0.31	56° 9' 2.5
11	46° 02' 0.28	43° 2' 1.6	37° 92' 0.30	32° 6' 1.1	18° 79' 0.28	59° 4' 2.5
21	46° 30' 0.23	41° 6' 1.3	38° 22' 0.26	31° 5' 0.7	19° 07' 0.25	61° 9' 2.3
31	46° 53' 0.19	40° 3' 1.1	38° 48' 0.21	30° 8' 0.3	19° 32' 0.20	64° 2' 2.2
Feb. 10	46° 72' 0.15	39° 2' 0.8	38° 69' 0.17	30° 5' 0.0	19° 52' 0.15	66° 4' 2.1
20	46° 87' 0.10	38° 4' 0.5	38° 86' 0.11	30° 5' 0.3	19° 67' 0.11	68° 5' 1.8
Mar. 2	46° 97' 0.05	37° 9' 0.2	38° 97' 0.07	30° 8' 0.5	19° 78' 0.07	70° 3' 1.6
12	47° 02' 0.02	37° 7' 0.0	39° 04' 0.02	31° 3' 0.8	19° 85' 0.02	71° 9' 1.3
22	47° 04' 0.02	37° 7' 0.1	39° 06' 0.02	32° 1' 0.9	19° 87' 0.01	73° 2' 1.1
Apr. 1	47° 02' 0.05	37° 8' 0.4	39° 04' 0.05	33° 0' 1.0	19° 86' 0.03	74° 3' 0.9
11	46° 97' 0.08	38° 2' 0.4	38° 99' 0.07	34° 0' 1.0	19° 83' 0.06	75° 2' 0.6
21	46° 89' 0.09	38° 6' 0.6	38° 92' 0.10	35° 0' 1.0	19° 77' 0.09	75° 8' 0.3
May 1	46° 80' 0.10	39° 2' 0.5	38° 82' 0.10	36° 0' 0.9	19° 68' 0.09	76° 1' 0.2
11	46° 70' 0.10	39° 7' 0.6	38° 72' 0.12	36° 9' 0.9	19° 59' 0.10	76° 3' 0.1
21	46° 60' 0.10	40° 3' 0.6	38° 60' 0.11	37° 8' 0.7	19° 49' 0.10	76° 2' 0.3
31	46° 50' 0.10	40° 9' 0.5	38° 49' 0.11	38° 5' 0.5	19° 39' 0.10	75° 9' 0.4
June 10	46° 40' 0.09	41° 4' 0.5	38° 38' 0.10	39° 0' 0.3	19° 29' 0.10	75° 5' 0.6
20	46° 31' 0.08	41° 9' 0.5	38° 28' 0.09	39° 3' 0.2	19° 19' 0.09	74° 9' 0.8
30	46° 23' 0.07	42° 4' 0.3	38° 19' 0.08	39° 5' 0.0	19° 10' 0.08	74° 1' 0.9
July 10	46° 16' 0.05	42° 7' 0.3	38° 11' 0.06	39° 5' 0.3	19° 02' 0.07	73° 2' 1.0
20	46° 11' 0.03	43° 0' 0.2	38° 05' 0.05	39° 2' 0.4	18° 95' 0.05	72° 2' 1.0
30	46° 08' 0.02	43° 2' 0.0	38° 00' 0.02	38° 8' 0.6	18° 90' 0.04	71° 2' 1.1
Aug. 9	46° 06' 0.01	43° 2' 0.1	37° 98' 0.00	38° 2' 0.8	18° 86' 0.01	70° 1' 1.0
19	46° 07' 0.04	43° 1' 0.2	37° 98' 0.03	37° 4' 1.1	18° 85' 0.01	69° 1' 1.0
29	46° 11' 0.07	42° 9' 0.6	38° 01' 0.05	36° 3' 1.2	18° 86' 0.04	68° 1' 0.8
Sept. 8	46° 18' 0.10	42° 3' 0.7	38° 07' 0.09	35° 5' 1.5	18° 90' 0.09	67° 3' 0.7
18	46° 28' 0.13	41° 6' 0.9	38° 16' 0.13	33° 5' 1.7	18° 99' 0.12	66° 6' 0.4
28	46° 41' 0.16	40° 7' 1.1	38° 29' 0.16	31° 8' 1.9	19° 11' 0.15	66° 2' 0.1
Oct. 8	46° 57' 0.20	39° 6' 1.4	38° 45' 0.21	29° 9' 2.0	19° 26' 0.20	66° 1' 0.2
18	46° 77' 0.24	38° 2' 1.6	38° 66' 0.24	27° 9' 2.2	19° 46' 0.23	66° 3' 0.6
28	47° 01' 0.27	36° 6' 1.8	38° 90' 0.27	25° 7' 2.3	19° 69' 0.27	66° 9' 1.0
Nov. 7	47° 28' 0.30	34° 8' 2.0	39° 17' 0.31	23° 5' 2.3	19° 96' 0.30	67° 9' 1.3
17	47° 58' 0.33	32° 8' 2.1	39° 48' 0.33	21° 2' 2.3	20° 26' 0.32	69° 2' 1.6
27	47° 91' 0.33	30° 7' 2.1	39° 81' 0.35	18° 9' 2.1	20° 58' 0.34	70° 8' 2.0
Dec. 7	48° 24' 0.34	28° 6' 2.1	40° 16' 0.36	16° 8' 2.1	20° 92' 0.35	72° 8' 2.1
17	48° 58' 0.33	26° 5' 2.1	40° 52' 0.35	14° 7' 1.8	21° 27' 0.34	74° 9' 2.4
27	48° 91' 0.32	24° 4' 2.0	40° 87' 0.34	12° 9' 1.5	21° 61' 0.32	77° 3' 2.7
37	49° 23' 0.32	22° 4' 2.0	41° 21' 0.34	11° 4' 1.5	21° 93' 0.32	80° 0' 2.7

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	ν Leonis.			β Leonis.			γ Ursæ Majoris.					
	R. A.	Dec. South.		R. A.	Dec. North.		R. A.	Dec. North.				
	^h II	^m 29	[°] 0	['] 2	^h II	^m 41	[°] 15	['] 21	^h II	^m 46	[°] 54	['] 28
Jan. I	44.74	0.32	47.7	52.89	0.34	26.9	25.61	23.1	25.61	0.48	23.1	0.6
II	45.06	0.29	49.8	53.23	0.30	25.1	26.09	22.5	26.09	0.45	22.5	0.0
21	45.35	0.26	51.8	53.53	0.27	23.7	26.54	22.5	26.54	0.41	22.5	0.6
31	45.61	0.21	53.6	53.80	0.24	22.6	26.95	23.1	26.95	0.35	23.1	1.1
Feb. 10	45.82	0.18	55.1	54.04	0.19	21.8	27.30	24.2	27.30	0.29	24.2	1.6
20	46.00	0.13	56.4	54.23	0.15	21.3	27.59	25.8	27.59	0.21	25.8	1.9
Mar. 2	46.13	0.08	57.5	54.38	0.10	21.2	27.80	27.7	27.80	0.13	27.7	2.2
12	46.21	0.05	58.2	54.48	0.05	21.4	27.93	29.9	27.93	0.06	29.9	2.4
22	46.26	0.01	58.7	54.53	0.02	21.8	27.99	32.3	27.99	0.00	32.3	2.5
Apr. I	46.27	0.02	59.0	54.55	0.01	22.5	27.99	34.8	27.99	0.07	34.8	2.4
11	46.25	0.05	59.1	54.54	0.04	23.2	27.92	37.2	27.92	0.12	37.2	2.3
21	46.20	0.06	58.9	54.50	0.07	24.1	27.80	39.5	27.80	0.17	39.5	2.1
May I	46.14	0.08	58.7	54.43	0.08	24.9	27.63	41.6	27.63	0.20	41.6	1.8
11	46.06	0.09	58.4	54.35	0.09	25.9	27.43	43.4	27.43	0.22	43.4	1.5
21	45.97	0.09	57.9	54.26	0.10	26.8	27.21	44.9	27.21	0.24	44.9	1.0
31	45.88	0.09	57.4	54.16	0.10	27.6	26.97	45.9	26.97	0.25	45.9	0.6
June 10	45.79	0.09	56.9	54.06	0.10	28.3	26.72	46.5	26.72	0.24	46.5	0.1
20	45.70	0.09	56.3	53.96	0.09	28.8	26.48	46.6	26.48	0.24	46.6	0.3
30	45.61	0.08	55.7	53.87	0.09	29.2	26.24	46.3	26.24	0.22	46.3	0.7
July 10	45.53	0.07	55.1	53.78	0.08	29.5	26.02	45.6	26.02	0.20	45.6	1.2
20	45.46	0.05	54.6	53.70	0.07	29.6	25.82	44.4	25.82	0.17	44.4	1.6
30	45.41	0.04	54.1	53.63	0.05	29.5	25.65	42.8	25.65	0.14	42.8	2.0
Aug. 9	45.37	0.02	53.7	53.58	0.04	29.2	25.51	40.8	25.51	0.11	40.8	2.3
19	45.35	0.00	53.4	53.54	0.01	28.7	25.40	38.5	25.40	0.06	38.5	2.6
Sept. 29	45.35	0.03	53.2	53.53	0.02	28.1	25.34	35.9	25.34	0.02	35.9	2.9
8	45.38	0.07	53.2	53.55	0.05	27.2	25.32	33.0	25.32	0.03	33.0	3.1
18	45.45	0.10	53.4	53.60	0.09	26.1	25.35	29.9	25.35	0.10	29.9	3.5
28	45.55	0.13	53.8	53.69	0.12	24.6	25.45	26.4	25.45	0.14	26.4	3.4
Oct. 8	45.68	0.18	54.5	53.81	0.17	23.0	25.59	23.0	25.59	0.21	23.0	3.4
18	45.86	0.21	55.5	53.98	0.20	21.2	25.80	19.6	25.80	0.27	19.6	3.3
28	46.07	0.25	56.7	54.18	0.24	19.2	26.07	16.3	26.07	0.33	16.3	3.3
Nov. 7	46.32	0.28	58.2	54.42	0.28	17.0	26.40	13.0	26.40	0.38	13.0	3.0
17	46.60	0.31	60.0	54.70	0.31	14.8	26.78	10.0	26.78	0.43	10.0	2.7
27	46.91	0.33	61.9	55.01	0.33	12.5	27.21	7.3	27.21	0.47	7.3	2.3
Dec. 7	47.24	0.34	64.0	55.34	0.34	10.2	27.68	5.0	27.68	0.49	5.0	1.9
17	47.58	0.34	66.2	55.68	0.35	7.9	28.17	3.1	28.17	0.49	3.1	1.4
27	47.92	0.32	68.4	56.03	0.33	5.8	28.66	1.7	28.66	0.49	1.7	0.9
37	48.24	0.32	70.6	56.36	0.33	4.0	29.15	0.8	29.15	0.49	0.8	0.9

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	ε Corvi.		β Chamseleontis.		η Virginis.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. North.
	^h 12 ^m 2	[°] 21 ['] 50	^h 12 ^m 10	[°] 78 ['] 31	^h 12 ^m 12	[°] 0 ['] 6
Jan. 1	53 ^s 25 ^s	0 ^s 34 ^s	8 ^s 34 ^s	29 ^s 8 ^s	42 ^s 23 ^s	56 ^s 8 ^s
11	53 ^s 59 ^s	0 ^s 32 ^s	9 ^s 54 ^s	31 ^s 7 ^s	42 ^s 56 ^s	54 ^s 7 ^s
21	53 ^s 91 ^s	0 ^s 29 ^s	10 ^s 62 ^s	34 ^s 1 ^s	42 ^s 87 ^s	52 ^s 7 ^s
31	54 ^s 20 ^s	0 ^s 25 ^s	11 ^s 60 ^s	37 ^s 0 ^s	43 ^s 16 ^s	50 ^s 9 ^s
Feb. 10	54 ^s 45 ^s	0 ^s 21 ^s	12 ^s 45 ^s	40 ^s 3 ^s	43 ^s 41 ^s	49 ^s 3 ^s
20	54 ^s 66 ^s	0 ^s 16 ^s	13 ^s 14 ^s	43 ^s 8 ^s	43 ^s 62 ^s	48 ^s 0 ^s
Mar. 2	54 ^s 82 ^s	0 ^s 13 ^s	13 ^s 66 ^s	47 ^s 6 ^s	43 ^s 79 ^s	47 ^s 0 ^s
12	54 ^s 95 ^s	0 ^s 08 ^s	14 ^s 02 ^s	51 ^s 4 ^s	43 ^s 92 ^s	46 ^s 2 ^s
22	55 ^s 03 ^s	0 ^s 04 ^s	14 ^s 21 ^s	55 ^s 3 ^s	44 ^s 01 ^s	45 ^s 7 ^s
Apr. 1	55 ^s 07 ^s	0 ^s 02 ^s	14 ^s 24 ^s	59 ^s 1 ^s	44 ^s 06 ^s	45 ^s 4 ^s
11	55 ^s 09 ^s	0 ^s 02 ^s	14 ^s 10 ^s	62 ^s 8 ^s	44 ^s 08 ^s	45 ^s 4 ^s
21	55 ^s 07 ^s	0 ^s 04 ^s	13 ^s 82 ^s	66 ^s 3 ^s	44 ^s 07 ^s	45 ^s 5 ^s
May 1	55 ^s 03 ^s	0 ^s 07 ^s	13 ^s 40 ^s	69 ^s 5 ^s	44 ^s 04 ^s	45 ^s 8 ^s
11	54 ^s 06 ^s	0 ^s 07 ^s	12 ^s 86 ^s	72 ^s 3 ^s	43 ^s 99 ^s	46 ^s 2 ^s
21	54 ^s 89 ^s	0 ^s 09 ^s	12 ^s 20 ^s	74 ^s 8 ^s	43 ^s 93 ^s	46 ^s 7 ^s
31	54 ^s 80 ^s	0 ^s 10 ^s	11 ^s 45 ^s	76 ^s 8 ^s	43 ^s 85 ^s	47 ^s 2 ^s
June 10	54 ^s 70 ^s	0 ^s 10 ^s	10 ^s 63 ^s	78 ^s 3 ^s	43 ^s 77 ^s	47 ^s 8 ^s
20	54 ^s 60 ^s	0 ^s 11 ^s	9 ^s 75 ^s	79 ^s 2 ^s	43 ^s 68 ^s	48 ^s 4 ^s
30	54 ^s 49 ^s	0 ^s 10 ^s	8 ^s 84 ^s	79 ^s 7 ^s	43 ^s 59 ^s	49 ^s 0 ^s
July 10	54 ^s 39 ^s	0 ^s 10 ^s	7 ^s 93 ^s	79 ^s 6 ^s	43 ^s 50 ^s	49 ^s 5 ^s
20	54 ^s 29 ^s	0 ^s 09 ^s	7 ^s 04 ^s	78 ^s 9 ^s	43 ^s 41 ^s	50 ^s 1 ^s
30	54 ^s 20 ^s	0 ^s 08 ^s	6 ^s 21 ^s	77 ^s 6 ^s	43 ^s 34 ^s	50 ^s 5 ^s
Aug. 9	54 ^s 12 ^s	0 ^s 06 ^s	5 ^s 45 ^s	76 ^s 0 ^s	43 ^s 27 ^s	50 ^s 9 ^s
19	54 ^s 06 ^s	0 ^s 04 ^s	4 ^s 80 ^s	73 ^s 8 ^s	43 ^s 21 ^s	51 ^s 2 ^s
29	54 ^s 02 ^s	0 ^s 01 ^s	4 ^s 30 ^s	71 ^s 3 ^s	43 ^s 18 ^s	51 ^s 3 ^s
Sept. 8	54 ^s 01 ^s	0 ^s 02 ^s	3 ^s 95 ^s	68 ^s 6 ^s	43 ^s 16 ^s	51 ^s 3 ^s
18	54 ^s 03 ^s	0 ^s 07 ^s	3 ^s 79 ^s	65 ^s 7 ^s	43 ^s 18 ^s	51 ^s 0 ^s
28	54 ^s 10 ^s	0 ^s 11 ^s	3 ^s 83 ^s	62 ^s 4 ^s	43 ^s 24 ^s	50 ^s 6 ^s
Oct. 8	54 ^s 21 ^s	0 ^s 16 ^s	4 ^s 09 ^s	59 ^s 4 ^s	43 ^s 33 ^s	49 ^s 9 ^s
18	54 ^s 37 ^s	0 ^s 20 ^s	4 ^s 56 ^s	56 ^s 7 ^s	43 ^s 47 ^s	48 ^s 9 ^s
28	54 ^s 57 ^s	0 ^s 24 ^s	5 ^s 23 ^s	54 ^s 4 ^s	43 ^s 64 ^s	47 ^s 7 ^s
Nov. 7	54 ^s 81 ^s	0 ^s 28 ^s	6 ^s 07 ^s	52 ^s 4 ^s	43 ^s 86 ^s	46 ^s 3 ^s
17	55 ^s 09 ^s	0 ^s 32 ^s	7 ^s 07 ^s	50 ^s 8 ^s	44 ^s 12 ^s	44 ^s 6 ^s
27	55 ^s 41 ^s	0 ^s 34 ^s	8 ^s 19 ^s	49 ^s 8 ^s	44 ^s 41 ^s	42 ^s 6 ^s
Dec. 7	55 ^s 75 ^s	0 ^s 35 ^s	9 ^s 40 ^s	49 ^s 5 ^s	44 ^s 72 ^s	40 ^s 6 ^s
17	56 ^s 10 ^s	0 ^s 36 ^s	10 ^s 66 ^s	49 ^s 8 ^s	45 ^s 05 ^s	38 ^s 4 ^s
27	56 ^s 46 ^s	0 ^s 36 ^s	11 ^s 92 ^s	50 ^s 8 ^s	45 ^s 39 ^s	36 ^s 2 ^s

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α^1 Crucis.			β Corvi.			γ^1 Virginis.		
	R. A.		Dec. South.	R. A.		Dec. South.	R. A.		Dec. South.
	^h 12	^m 18	[°] 62 ['] 18	^h 12 ^m 26	[°] 22 ['] 36	^h 12 ^m 34	[°] 0 ['] 40		
Jan. 1	46 ^s 72 ^s	0 ^s 59	45 ^s 7 ^s	59 ^s 49 ^s	0 ^s 35	57 ^s 9 ^s	31 ^s 57 ^s	39 ^s 1 ^s	2 ^s 2
11	47 ^s 31 ^s	0 ^s 54	47 ^s 8 ^s	59 ^s 84 ^s	0 ^s 34	60 ^s 2 ^s	31 ^s 90 ^s	41 ^s 3 ^s	2 ^s 0
21	47 ^s 85 ^s	0 ^s 49	50 ^s 3 ^s	60 ^s 18 ^s	0 ^s 30	62 ^s 6 ^s	32 ^s 22 ^s	43 ^s 3 ^s	1 ^s 8
31	48 ^s 34 ^s	0 ^s 43	53 ^s 2 ^s	60 ^s 48 ^s	0 ^s 28	65 ^s 1 ^s	32 ^s 52 ^s	45 ^s 1 ^s	1 ^s 6
Feb. 10	48 ^s 77 ^s	0 ^s 36	56 ^s 4 ^s	60 ^s 76 ^s	0 ^s 23	67 ^s 5 ^s	32 ^s 78 ^s	46 ^s 7 ^s	1 ^s 4
20	49 ^s 13 ^s	0 ^s 29	59 ^s 8 ^s	60 ^s 99 ^s	0 ^s 19	69 ^s 8 ^s	33 ^s 01 ^s	48 ^s 1 ^s	1 ^s 1
Mar. 2	49 ^s 42 ^s	0 ^s 21	63 ^s 4 ^s	61 ^s 18 ^s	0 ^s 15	72 ^s 0 ^s	33 ^s 20 ^s	49 ^s 2 ^s	0 ^s 8
12	49 ^s 63 ^s	0 ^s 14	67 ^s 0 ^s	61 ^s 33 ^s	0 ^s 11	74 ^s 0 ^s	33 ^s 35 ^s	50 ^s 0 ^s	0 ^s 5
22	49 ^s 77 ^s	0 ^s 07	70 ^s 5 ^s	61 ^s 44 ^s	0 ^s 07	75 ^s 9 ^s	33 ^s 46 ^s	50 ^s 5 ^s	0 ^s 3
Apr. 1	49 ^s 84 ^s	0 ^s 00	74 ^s 0 ^s	61 ^s 51 ^s	0 ^s 04	77 ^s 5 ^s	33 ^s 54 ^s	50 ^s 8 ^s	0 ^s 1
11	49 ^s 84 ^s	0 ^s 06	77 ^s 3 ^s	61 ^s 55 ^s	0 ^s 01	78 ^s 9 ^s	33 ^s 58 ^s	50 ^s 9 ^s	0 ^s 1
21	49 ^s 78 ^s	0 ^s 12	80 ^s 4 ^s	61 ^s 56 ^s	0 ^s 02	80 ^s 0 ^s	33 ^s 59 ^s	50 ^s 8 ^s	0 ^s 3
May 1	49 ^s 66 ^s	0 ^s 17	83 ^s 1 ^s	61 ^s 54 ^s	0 ^s 04	80 ^s 9 ^s	33 ^s 58 ^s	50 ^s 5 ^s	0 ^s 4
11	49 ^s 49 ^s	0 ^s 21	85 ^s 5 ^s	61 ^s 50 ^s	0 ^s 06	81 ^s 6 ^s	33 ^s 55 ^s	50 ^s 1 ^s	0 ^s 4
21	49 ^s 28 ^s	0 ^s 24	87 ^s 5 ^s	61 ^s 44 ^s	0 ^s 08	82 ^s 1 ^s	33 ^s 50 ^s	49 ^s 7 ^s	0 ^s 6
31	49 ^s 04 ^s	0 ^s 29	89 ^s 1 ^s	61 ^s 36 ^s	0 ^s 08	82 ^s 3 ^s	33 ^s 43 ^s	49 ^s 1 ^s	0 ^s 6
June 10	48 ^s 75 ^s	0 ^s 30	90 ^s 2 ^s	61 ^s 28 ^s	0 ^s 10	82 ^s 3 ^s	33 ^s 35 ^s	48 ^s 5 ^s	0 ^s 6
20	48 ^s 45 ^s	0 ^s 32	90 ^s 9 ^s	61 ^s 18 ^s	0 ^s 11	82 ^s 1 ^s	33 ^s 27 ^s	47 ^s 9 ^s	0 ^s 5
30	48 ^s 13 ^s	0 ^s 32	91 ^s 1 ^s	61 ^s 07 ^s	0 ^s 11	81 ^s 7 ^s	33 ^s 18 ^s	47 ^s 4 ^s	0 ^s 6
July 10	47 ^s 81 ^s	0 ^s 32	90 ^s 8 ^s	60 ^s 96 ^s	0 ^s 10	81 ^s 1 ^s	33 ^s 09 ^s	46 ^s 8 ^s	0 ^s 5
20	47 ^s 49 ^s	0 ^s 31	90 ^s 0 ^s	60 ^s 86 ^s	0 ^s 11	80 ^s 3 ^s	32 ^s 99 ^s	46 ^s 3 ^s	0 ^s 5
30	47 ^s 18 ^s	0 ^s 28	88 ^s 7 ^s	60 ^s 75 ^s	0 ^s 09	79 ^s 3 ^s	32 ^s 90 ^s	45 ^s 8 ^s	0 ^s 4
Aug. 9	46 ^s 90 ^s	0 ^s 24	87 ^s 0 ^s	60 ^s 66 ^s	0 ^s 08	78 ^s 2 ^s	32 ^s 82 ^s	45 ^s 4 ^s	0 ^s 3
19	46 ^s 66 ^s	0 ^s 18	85 ^s 0 ^s	60 ^s 58 ^s	0 ^s 06	77 ^s 1 ^s	32 ^s 74 ^s	45 ^s 1 ^s	0 ^s 2
29	46 ^s 48 ^s	0 ^s 12	82 ^s 6 ^s	60 ^s 52 ^s	0 ^s 03	75 ^s 9 ^s	32 ^s 69 ^s	44 ^s 9 ^s	0 ^s 0
Sept. 8	46 ^s 36 ^s	0 ^s 05	80 ^s 1 ^s	60 ^s 49 ^s	0 ^s 00	74 ^s 8 ^s	32 ^s 66 ^s	44 ^s 9 ^s	0 ^s 1
18	46 ^s 31 ^s	0 ^s 03	77 ^s 4 ^s	60 ^s 49 ^s	0 ^s 04	73 ^s 7 ^s	32 ^s 65 ^s	45 ^s 0 ^s	0 ^s 4
28	{46 ^s 31 ^s }	{0 ^s 03}	{77 ^s 4 ^s }	60 ^s 53 ^s	0 ^s 09	72 ^s 8 ^s	32 ^s 68 ^s	45 ^s 4 ^s	0 ^s 7
Oct. 8	46 ^s 48 ^s	0 ^s 23	72 ^s 0 ^s	60 ^s 62 ^s	0 ^s 13	72 ^s 0 ^s	32 ^s 76 ^s	46 ^s 1 ^s	0 ^s 9
18	46 ^s 71 ^s	0 ^s 31	69 ^s 8 ^s	60 ^s 75 ^s	0 ^s 18	71 ^s 6 ^s	32 ^s 87 ^s	47 ^s 0 ^s	1 ^s 1
28	47 ^s 02 ^s	0 ^s 39	67 ^s 7 ^s	60 ^s 93 ^s	0 ^s 22	71 ^s 5 ^s	33 ^s 03 ^s	48 ^s 1 ^s	1 ^s 4
Nov. 7	47 ^s 41 ^s	0 ^s 47	66 ^s 1 ^s	61 ^s 15 ^s	0 ^s 27	71 ^s 8 ^s	33 ^s 23 ^s	49 ^s 5 ^s	1 ^s 7
17	47 ^s 88 ^s	0 ^s 53	65 ^s 0 ^s	61 ^s 42 ^s	0 ^s 30	72 ^s 4 ^s	33 ^s 46 ^s	51 ^s 2 ^s	1 ^s 9
27	48 ^s 41 ^s	0 ^s 57	64 ^s 5 ^s	61 ^s 72 ^s	0 ^s 33	73 ^s 4 ^s	33 ^s 74 ^s	53 ^s 1 ^s	2 ^s 0
Dec. 7	48 ^s 98 ^s	0 ^s 60	64 ^s 5 ^s	62 ^s 05 ^s	0 ^s 36	74 ^s 8 ^s	34 ^s 05 ^s	55 ^s 1 ^s	2 ^s 1
17	49 ^s 58 ^s	0 ^s 61	65 ^s 2 ^s	62 ^s 41 ^s	0 ^s 36	76 ^s 5 ^s	34 ^s 37 ^s	57 ^s 2 ^s	2 ^s 2
27	50 ^s 19 ^s	0 ^s 60	66 ^s 4 ^s	62 ^s 77 ^s	0 ^s 42	78 ^s 4 ^s	34 ^s 71 ^s	59 ^s 4 ^s	2 ^s 2
37	50 ^s 79 ^s	0 ^s 60	68 ^s 2 ^s	63 ^s 12 ^s	0 ^s 35	80 ^s 6 ^s	35 ^s 04 ^s	61 ^s 6 ^s	2 ^s 2

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	12 Canum Venaticor.		θ Virginis.		α Virginis. (Spica)	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. South.
	^h 12	^m 49	^h 13	^m 2	^h 13	^m 17
	[°] 39	['] 4	[°] 4	['] 47	[°] 10	['] 25
Jan. 1	26 ^h 33 ^m	31 [°] 4 [']	39 ^h 47 ^m	12 [°] 1 [']	46 ^h 32 ^m	30 [°] 8 [']
11	26 ^h 72 ^m 0 ^s 39	29 [°] 7 ['] 1 ^s 7	39 ^h 81 ^m 0 ^s 34	14 [°] 2 ['] 1 ^s 1	46 ^h 67 ^m 0 ^s 35	32 [°] 9 ['] 2 ^s 1
21	27 ^h 10 ^m 0 ^s 38	28 [°] 6 ['] 1 ^s 1	40 ^h 14 ^m 0 ^s 33	16 [°] 3 ['] 1 ^s 1	47 ^h 00 ^m 0 ^s 33	34 [°] 9 ['] 2 ^s 0
31	27 ^h 47 ^m 0 ^s 37	28 [°] 0 ['] 0 ^s 6	40 ^h 45 ^m 0 ^s 31	18 [°] 2 ['] 1 ^s 9	47 ^h 32 ^m 0 ^s 32	36 [°] 9 ['] 2 ^s 0
Feb. 10	27 ^h 80 ^m 0 ^s 33	28 [°] 0 ['] 0 ^s 0	40 ^h 73 ^m 0 ^s 28	19 [°] 9 ['] 1 ^s 7	47 ^h 62 ^m 0 ^s 30	38 [°] 8 ['] 1 ^s 9
20	28 ^h 09 ^m 0 ^s 29	28 [°] 4 ['] 0 ^s 4	40 ^h 98 ^m 0 ^s 25	21 [°] 4 ['] 1 ^s 5	47 ^h 88 ^m 0 ^s 26	40 [°] 5 ['] 1 ^s 7
Mar. 2	28 ^h 33 ^m 0 ^s 24	29 [°] 4 ['] 1 ^s 0	41 ^h 20 ^m 0 ^s 22	22 [°] 7 ['] 1 ^s 3	48 ^h 11 ^m 0 ^s 23	42 [°] 0 ['] 1 ^s 5
12	28 ^h 52 ^m 0 ^s 19	30 [°] 7 ['] 1 ^s 3	41 ^h 38 ^m 0 ^s 18	23 [°] 7 ['] 1 ^s 0	48 ^h 30 ^m 0 ^s 19	43 [°] 3 ['] 1 ^s 3
22	28 ^h 65 ^m 0 ^s 13	32 [°] 4 ['] 1 ^s 7	41 ^h 52 ^m 0 ^s 14	24 [°] 5 ['] 0 ^s 8	48 ^h 46 ^m 0 ^s 16	44 [°] 4 ['] 1 ^s 1
Apr. 1	28 ^h 74 ^m 0 ^s 09	34 [°] 3 ['] 1 ^s 9	41 ^h 62 ^m 0 ^s 10	25 [°] 0 ['] 5 ^s 5	48 ^h 59 ^m 0 ^s 13	45 [°] 2 ['] 0 ^s 8
11	28 ^h 78 ^m 0 ^s 04	36 [°] 4 ['] 2 ^s 1	41 ^h 70 ^m 0 ^s 08	25 [°] 3 ['] 0 ^s 3	48 ^h 68 ^m 0 ^s 09	45 [°] 9 ['] 0 ^s 7
21	28 ^h 78 ^m 0 ^s 00	38 [°] 6 ['] 2 ^s 2	41 ^h 74 ^m 0 ^s 04	25 [°] 4 ['] 0 ^s 1	48 ^h 74 ^m 0 ^s 06	46 [°] 3 ['] 0 ^s 4
May 1	28 ^h 74 ^m 0 ^s 04	40 [°] 7 ['] 2 ^s 1	41 ^h 75 ^m 0 ^s 01	25 [°] 3 ['] 0 ^s 1	48 ^h 77 ^m 0 ^s 03	46 [°] 5 ['] 0 ^s 2
11	28 ^h 67 ^m 0 ^s 07	42 [°] 7 ['] 2 ^s 0	41 ^h 75 ^m 0 ^s 03	25 [°] 1 ['] 0 ^s 2	48 ^h 78 ^m 0 ^s 01	46 [°] 6 ['] 0 ^s 1
21	28 ^h 57 ^m 0 ^s 10	44 [°] 5 ['] 1 ^s 8	41 ^h 72 ^m 0 ^s 03	24 [°] 8 ['] 0 ^s 3	48 ^h 76 ^m 0 ^s 02	46 [°] 5 ['] 0 ^s 1
31	28 ^h 45 ^m 0 ^s 12	46 [°] 1 ['] 1 ^s 6	41 ^h 67 ^m 0 ^s 05	24 [°] 4 ['] 0 ^s 4	48 ^h 73 ^m 0 ^s 03	46 [°] 3 ['] 0 ^s 2
June 10	28 ^h 31 ^m 0 ^s 14	47 [°] 4 ['] 1 ^s 3	41 ^h 61 ^m 0 ^s 06	23 [°] 9 ['] 0 ^s 5	48 ^h 67 ^m 0 ^s 06	46 [°] 0 ['] 0 ^s 3
20	28 ^h 16 ^m 0 ^s 15	48 [°] 3 ['] 0 ^s 9	41 ^h 53 ^m 0 ^s 08	23 [°] 4 ['] 0 ^s 5	48 ^h 60 ^m 0 ^s 07	45 [°] 6 ['] 0 ^s 4
30	28 ^h 00 ^m 0 ^s 16	48 [°] 9 ['] 0 ^s 6	41 ^h 45 ^m 0 ^s 08	22 [°] 8 ['] 0 ^s 6	48 ^h 52 ^m 0 ^s 08	45 [°] 2 ['] 0 ^s 4
July 10	27 ^h 84 ^m 0 ^s 16	49 [°] 1 ['] 0 ^s 2	41 ^h 35 ^m 0 ^s 10	22 [°] 2 ['] 0 ^s 6	48 ^h 42 ^m 0 ^s 10	44 [°] 7 ['] 0 ^s 5
20	27 ^h 68 ^m 0 ^s 16	49 [°] 0 ['] 0 ^s 1	41 ^h 26 ^m 0 ^s 09	21 [°] 7 ['] 0 ^s 5	48 ^h 32 ^m 0 ^s 10	44 [°] 1 ['] 0 ^s 6
30	27 ^h 52 ^m 0 ^s 16	48 [°] 4 ['] 0 ^s 6	41 ^h 16 ^m 0 ^s 10	21 [°] 1 ['] 0 ^s 6	48 ^h 22 ^m 0 ^s 10	43 [°] 5 ['] 0 ^s 6
Aug. 9	27 ^h 38 ^m 0 ^s 14	47 [°] 5 ['] 0 ^s 9	41 ^h 06 ^m 0 ^s 10	20 [°] 6 ['] 0 ^s 5	48 ^h 11 ^m 0 ^s 11	42 [°] 9 ['] 0 ^s 6
19	27 ^h 25 ^m 0 ^s 13	46 [°] 2 ['] 1 ^s 3	40 ^h 97 ^m 0 ^s 09	20 [°] 2 ['] 0 ^s 4	48 ^h 01 ^m 0 ^s 10	42 [°] 3 ['] 0 ^s 6
29	27 ^h 14 ^m 0 ^s 11	44 [°] 6 ['] 1 ^s 6	40 ^h 90 ^m 0 ^s 07	19 [°] 8 ['] 0 ^s 4	47 ^h 93 ^m 0 ^s 08	41 [°] 7 ['] 0 ^s 6
Sept. 8	27 ^h 06 ^m 0 ^s 08	42 [°] 6 ['] 2 ^s 0	40 ^h 84 ^m 0 ^s 06	19 [°] 6 ['] 0 ^s 2	47 ^h 86 ^m 0 ^s 07	41 [°] 2 ['] 0 ^s 5
18	27 ^h 01 ^m 0 ^s 05	40 [°] 4 ['] 2 ^s 2	40 ^h 81 ^m 0 ^s 03	19 [°] 6 ['] 0 ^s 1	47 ^h 86 ^m 0 ^s 05	40 [°] 9 ['] 0 ^s 3
28	27 ^h 01 ^m 0 ^s 00	37 [°] 8 ['] 2 ^s 6	40 ^h 81 ^m 0 ^s 00	19 [°] 5 ['] 0 ^s 1	47 ^h 80 ^m 0 ^s 01	40 [°] 6 ['] 0 ^s 3
Oct. 8	27 ^h 05 ^m 0 ^s 04	34 [°] 7 ['] 3 ^s 1	40 ^h 85 ^m 0 ^s 04	19 [°] 9 ['] 0 ^s 3	47 ^h 83 ^m 0 ^s 03	40 [°] 6 ['] 0 ^s 0
18	27 ^h 14 ^m 0 ^s 09	31 [°] 8 ['] 2 ^s 9	40 ^h 94 ^m 0 ^s 09	20 [°] 6 ['] 0 ^s 7	47 ^h 91 ^m 0 ^s 08	40 [°] 9 ['] 0 ^s 3
28	27 ^h 28 ^m 0 ^s 14	28 [°] 8 ['] 3 ^s 0	41 ^h 08 ^m 0 ^s 14	21 [°] 5 ['] 0 ^s 9	48 ^h 03 ^m 0 ^s 12	41 [°] 3 ['] 0 ^s 4
Nov. 7	27 ^h 48 ^m 0 ^s 20	25 [°] 5 ['] 3 ^s 3	41 ^h 25 ^m 0 ^s 17	22 [°] 6 ['] 1 ^s 1	48 ^h 19 ^m 0 ^s 16	42 [°] 1 ['] 0 ^s 8
17	27 ^h 73 ^m 0 ^s 25	22 [°] 3 ['] 3 ^s 2	41 ^h 47 ^m 0 ^s 22	24 [°] 0 ['] 1 ^s 4	48 ^h 40 ^m 0 ^s 21	43 [°] 2 ['] 1 ^s 1
27	28 ^h 02 ^m 0 ^s 29	19 [°] 3 ['] 3 ^s 0	41 ^h 73 ^m 0 ^s 26	25 [°] 6 ['] 1 ^s 6	48 ^h 66 ^m 0 ^s 26	44 [°] 5 ['] 1 ^s 3
Dec. 7	28 ^h 35 ^m 0 ^s 33	16 [°] 4 ['] 2 ^s 9	42 ^h 03 ^m 0 ^s 30	27 [°] 4 ['] 1 ^s 8	48 ^h 94 ^m 0 ^s 28	46 [°] 1 ['] 1 ^s 6
17	28 ^h 72 ^m 0 ^s 37	13 [°] 8 ['] 2 ^s 6	42 ^h 35 ^m 0 ^s 32	29 [°] 4 ['] 2 ^s 0	49 ^h 26 ^m 0 ^s 32	47 [°] 9 ['] 1 ^s 8
27	29 ^h 10 ^m 0 ^s 38	11 [°] 5 ['] 2 ^s 3	42 ^h 68 ^m 0 ^s 33	31 [°] 5 ['] 2 ^s 1	49 ^h 60 ^m 0 ^s 34	49 [°] 8 ['] 1 ^s 9
37	29 ^h 49 ^m 0 ^s 39	9 [°] 4 ['] 2 ^s 1	43 ^h 02 ^m 0 ^s 34	33 [°] 7 ['] 2 ^s 2	49 ^h 94 ^m 0 ^s 34	51 [°] 8 ['] 2 ^s 0

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	ζ Virginia.			η Ursæ Majoris.			η Bootis.		
	R. A.	Dec. North.		R. A.	Dec. North.		R. A.	Dec. North.	
	^h 13	^m 27	^o 0	^h 13	^m 41	^o 50	^h 13	^m 47	^o 19
			¹ 7			¹ 0			¹ 5
Jan. I	30 ^s 92 ^s	0 ^s 33	27 ^h 9 ^m	59 ^s 23 ^s	0 ^s 43 ^s	43 ^h 1 ^m	58 ^s 47 ^s	0 ^s 34	67 ^h 1 ^m
II	31 ^s 25 ^s	0 ^s 33	25 ^h 8 ^m	59 ^s 66 ^s	0 ^s 45 ^s	41 ^h 1 ^m	58 ^s 81 ^s	0 ^s 34	64 ^h 9 ^m
2I	31 ^s 58 ^s	0 ^s 32	23 ^h 8 ^m	60 ^s 11 ^s	0 ^s 43 ^s	39 ^h 7 ^m	59 ^s 15 ^s	0 ^s 33	63 ^h 0 ^m
3I	31 ^s 90 ^s	0 ^s 30	22 ^h 0 ^m	60 ^s 54 ^s	0 ^s 41 ^s	39 ^h 0 ^m	59 ^s 48 ^s	0 ^s 32	61 ^h 5 ^m
Feb. 10	32 ^s 20 ^s	0 ^s 27	20 ^h 4 ^m	60 ^s 95 ^s	0 ^s 37	38 ^h 8 ^m	59 ^s 80 ^s	0 ^s 29	60 ^h 4 ^m
20	32 ^s 47 ^s	0 ^s 23	19 ^h 1 ^m	61 ^s 32 ^s	0 ^s 33	39 ^h 3 ^m	60 ^s 09 ^s	0 ^s 25	59 ^h 7 ^m
Mar. 2	32 ^s 70 ^s	0 ^s 20	18 ^h 1 ^m	61 ^s 65 ^s	0 ^s 28	40 ^h 3 ^m	60 ^s 34 ^s	0 ^s 22	59 ^h 5 ^m
12	32 ^s 90 ^s	0 ^s 16	17 ^h 4 ^m	61 ^s 93 ^s	0 ^s 23	41 ^h 8 ^m	60 ^s 56 ^s	0 ^s 19	59 ^h 7 ^m
		0 ^s 13	16 ^h 9 ^m		0 ^s 16			0 ^s 14	60 ^h 2 ^m
Apr. I	33 ^s 19 ^s	0 ^s 10	16 ^h 7 ^m	62 ^s 32 ^s	0 ^s 11	46 ^h 1 ^m	60 ^s 89 ^s	0 ^s 11	61 ^h 1 ^m
II	33 ^s 29 ^s	0 ^s 06	16 ^h 7 ^m	62 ^s 43 ^s	0 ^s 05	48 ^h 6 ^m	61 ^s 00 ^s	0 ^s 08	62 ^h 2 ^m
2I	33 ^s 35 ^s	0 ^s 04	17 ^h 0 ^m	62 ^s 48 ^s	0 ^s 01	51 ^h 3 ^m	61 ^s 08 ^s	0 ^s 05	63 ^h 6 ^m
May I	33 ^s 39 ^s	0 ^s 01	17 ^h 4 ^m	62 ^s 47 ^s	0 ^s 05	53 ^h 9 ^m	61 ^s 13 ^s	0 ^s 01	65 ^h 1 ^m
II	33 ^s 40 ^s	0 ^s 01	17 ^h 9 ^m	62 ^s 42 ^s	0 ^s 09	56 ^h 5 ^m	61 ^s 14 ^s	0 ^s 01	66 ^h 6 ^m
2I	33 ^s 39 ^s	0 ^s 04	18 ^h 5 ^m	62 ^s 33 ^s	0 ^s 13	58 ^h 9 ^m	61 ^s 13 ^s	0 ^s 03	68 ^h 1 ^m
3I	33 ^s 35 ^s	0 ^s 05	19 ^h 1 ^m	62 ^s 20 ^s	0 ^s 16	61 ^h 1 ^m	61 ^s 10 ^s	0 ^s 06	69 ^h 5 ^m
June 10	33 ^s 30 ^s	0 ^s 06	19 ^h 8 ^m	62 ^s 04 ^s	0 ^s 19	62 ^h 9 ^m	61 ^s 04 ^s	0 ^s 08	70 ^h 9 ^m
20	33 ^s 24 ^s	0 ^s 08	20 ^h 5 ^m	61 ^s 85 ^s	0 ^s 21	64 ^h 4 ^m	60 ^s 96 ^s	0 ^s 09	72 ^h 1 ^m
30	33 ^s 16 ^s	0 ^s 09	21 ^h 2 ^m	61 ^s 64 ^s	0 ^s 23	65 ^h 5 ^m	60 ^s 87 ^s	0 ^s 11	73 ^h 1 ^m
July 10	33 ^s 07 ^s	0 ^s 11	21 ^h 8 ^m	61 ^s 41 ^s	0 ^s 24	66 ^h 1 ^m	60 ^s 76 ^s	0 ^s 12	73 ^h 9 ^m
20	32 ^s 96 ^s	0 ^s 11	22 ^h 3 ^m	61 ^s 17 ^s	0 ^s 24	66 ^h 3 ^m	60 ^s 64 ^s	0 ^s 13	74 ^h 4 ^m
30	32 ^s 85 ^s	0 ^s 10	22 ^h 8 ^m	60 ^s 93 ^s	0 ^s 24	66 ^h 0 ^m	60 ^s 51 ^s	0 ^s 12	74 ^h 7 ^m
Aug. 9	32 ^s 75 ^s	0 ^s 10	23 ^h 2 ^m	60 ^s 69 ^s	0 ^s 22	65 ^h 2 ^m	60 ^s 39 ^s	0 ^s 13	74 ^h 7 ^m
19	32 ^s 65 ^s	0 ^s 09	23 ^h 5 ^m	60 ^s 47 ^s	0 ^s 21	64 ^h 0 ^m	60 ^s 26 ^s	0 ^s 12	74 ^h 4 ^m
29	32 ^s 56 ^s	0 ^s 08	23 ^h 6 ^m	60 ^s 26 ^s	0 ^s 19	62 ^h 3 ^m	60 ^s 14 ^s	0 ^s 10	73 ^h 9 ^m
Sept. 8	32 ^s 48 ^s	0 ^s 05	23 ^h 6 ^m	60 ^s 07 ^s	0 ^s 15	60 ^h 3 ^m	60 ^s 04 ^s	0 ^s 08	73 ^h 1 ^m
18	32 ^s 43 ^s	0 ^s 02	23 ^h 4 ^m	59 ^s 92 ^s	0 ^s 11	57 ^h 9 ^m	59 ^s 96 ^s	0 ^s 05	72 ^h 0 ^m
28	32 ^s 41 ^s	0 ^s 01	23 ^h 1 ^m	59 ^s 81 ^s	0 ^s 06	55 ^h 1 ^m	59 ^s 91 ^s	0 ^s 02	70 ^h 6 ^m
Oct. 8	32 ^s 42 ^s	0 ^s 06	22 ^h 5 ^m	59 ^s 75 ^s	0 ^s 00	52 ^h 0 ^m	59 ^s 89 ^s	0 ^s 02	69 ^h 0 ^m
18	32 ^s 48 ^s	0 ^s 11	21 ^h 5 ^m	59 ^s 75 ^s	0 ^s 06	48 ^h 7 ^m	59 ^s 91 ^s	0 ^s 08	67 ^h 0 ^m
28	32 ^s 59 ^s	0 ^s 15	20 ^h 4 ^m	59 ^s 81 ^s	0 ^s 12	44 ^h 9 ^m	59 ^s 99 ^s	0 ^s 12	64 ^h 7 ^m
Nov. 7	32 ^s 74 ^s	0 ^s 19	19 ^h 1 ^m	59 ^s 93 ^s	0 ^s 19	41 ^h 3 ^m	60 ^s 11 ^s	0 ^s 17	62 ^h 3 ^m
17	32 ^s 93 ^s	0 ^s 24	17 ^h 5 ^m	60 ^s 12 ^s	0 ^s 26	37 ^h 8 ^m	60 ^s 28 ^s	0 ^s 22	59 ^h 8 ^m
27	33 ^s 17 ^s	0 ^s 27	15 ^h 7 ^m	60 ^s 38 ^s	0 ^s 32	34 ^h 3 ^m	60 ^s 50 ^s	0 ^s 26	57 ^h 1 ^m
Dec. 7	33 ^s 44 ^s	0 ^s 31	13 ^h 7 ^m	60 ^s 70 ^s	0 ^s 36	31 ^h 0 ^m	60 ^s 76 ^s	0 ^s 29	54 ^h 4 ^m
17	33 ^s 75 ^s	0 ^s 32	11 ^h 6 ^m	61 ^s 06 ^s	0 ^s 40	28 ^h 0 ^m	61 ^s 05 ^s	0 ^s 32	51 ^h 8 ^m
27	34 ^s 07 ^s	0 ^s 34	9 ^h 5 ^m	61 ^s 46 ^s	0 ^s 25	25 ^h 3 ^m	61 ^s 37 ^s	0 ^s 34	49 ^h 3 ^m
37	34 ^s 41 ^s	0 ^s 34	7 ^h 4 ^m	61 ^s 89 ^s	0 ^s 23	23 ^h 1 ^m	61 ^s 71 ^s	0 ^s 34	47 ^h 0 ^m

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	β Centauri.		τ Virginis.		α Bootis. (Arcturus)	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 13 ^m 53	[°] 59 ['] 41	^h 13 ^m 54	[°] 2 ['] 13	^h 14 ^m 9	[°] 19 ['] 54
Jan. 1	53 ^s .65 0 ^s .58	15 ^s .8 0 ^s .9	28 ^s .44 0 ^s .33	33 ^s .8 2 ^s .1	13 ^s .92 0 ^s .34	50 ^s .6 2 ^s .3
11	54 ^s .23 0 ^s .58	16 ^s .7 1 ^s .3	28 ^s .77 0 ^s .34	31 ^s .7 2 ^s .0	14 ^s .26 0 ^s .34	48 ^s .3 2 ^s .0
21	54 ^s .81 0 ^s .57	18 ^s .0 1 ^s .8	29 ^s .11 0 ^s .32	29 ^s .7 1 ^s .8	14 ^s .60 0 ^s .33	46 ^s .3 1 ^s .7
31	55 ^s .38 0 ^s .53	19 ^s .8 2 ^s .2	29 ^s .43 0 ^s .31	27 ^s .9 1 ^s .5	14 ^s .93 0 ^s .32	44 ^s .6 1 ^s .2
Feb. 10	55 ^s .91 0 ^s .49	22 ^s .0 2 ^s .4	29 ^s .74 0 ^s .28	26 ^s .4 1 ^s .2	15 ^s .25 0 ^s .30	43 ^s .4 0 ^s .7
20	56 ^s .40 0 ^s .45	24 ^s .4 2 ^s .7	30 ^s .02 0 ^s .25	25 ^s .2 1 ^s .0	15 ^s .55 0 ^s .26	42 ^s .7 0 ^s .3
Mar. 2	56 ^s .85 0 ^s .39	27 ^s .1 2 ^s .9	30 ^s .27 0 ^s .22	24 ^s .2 0 ^s .6	15 ^s .81 0 ^s .24	42 ^s .4 0 ^s .1
12	57 ^s .24 0 ^s .34	30 ^s .0 3 ^s .0	30 ^s .49 0 ^s .19	23 ^s .6 0 ^s .3	16 ^s .05 0 ^s .20	42 ^s .5 0 ^s .5
22	57 ^s .58 0 ^s .27	33 ^s .0 3 ^s .1	30 ^s .68 0 ^s .16	23 ^s .3 0 ^s .1	16 ^s .25 0 ^s .17	43 ^s .0 0 ^s .9
Apr. 1	57 ^s .85 0 ^s .22	36 ^s .1 3 ^s .0	30 ^s .84 0 ^s .12	23 ^s .2 0 ^s .2	16 ^s .42 0 ^s .13	43 ^s .9 1 ^s .1
11	58 ^s .07 0 ^s .15	39 ^s .1 3 ^s .0	30 ^s .96 0 ^s .09	23 ^s .4 0 ^s .4	16 ^s .55 0 ^s .09	45 ^s .0 1 ^s .4
21	58 ^s .22 0 ^s .09	42 ^s .1 2 ^s .9	31 ^s .05 0 ^s .06	23 ^s .8 0 ^s .6	16 ^s .64 0 ^s .07	46 ^s .4 1 ^s .5
May 1	58 ^s .31 0 ^s .04	45 ^s .0 2 ^s .6	31 ^s .11 0 ^s .04	24 ^s .4 0 ^s .7	16 ^s .71 0 ^s .03	47 ^s .9 1 ^s .5
11	58 ^s .35 0 ^s .02	47 ^s .6 2 ^s .5	31 ^s .15 0 ^s .01	25 ^s .1 0 ^s .7	16 ^s .74 0 ^s .00	49 ^s .4 1 ^s .6
21	58 ^s .33 0 ^s .07	50 ^s .1 2 ^s .2	31 ^s .16 0 ^s .02	25 ^s .8 0 ^s .8	16 ^s .74 0 ^s .02	51 ^s .0 1 ^s .6
31	58 ^s .26 0 ^s .13	52 ^s .3 1 ^s .8	31 ^s .14 0 ^s .03	26 ^s .6 0 ^s .9	16 ^s .72 0 ^s .04	52 ^s .6 1 ^s .4
June 10	58 ^s .13 0 ^s .17	54 ^s .1 1 ^s .5	31 ^s .11 0 ^s .06	27 ^s .5 0 ^s .7	16 ^s .68 0 ^s .07	54 ^s .0 1 ^s .3
20	57 ^s .96 0 ^s .21	55 ^s .6 1 ^s .1	31 ^s .05 0 ^s .07	28 ^s .2 0 ^s .8	16 ^s .61 0 ^s .09	55 ^s .3 1 ^s .1
30	57 ^s .75 0 ^s .25	56 ^s .7 0 ^s .7	30 ^s .98 0 ^s .09	29 ^s .0 0 ^s .6	16 ^s .52 0 ^s .11	56 ^s .4 0 ^s .9
July 10	57 ^s .50 0 ^s .28	57 ^s .4 0 ^s .2	30 ^s .89 0 ^s .10	29 ^s .6 0 ^s .6	16 ^s .41 0 ^s .12	57 ^s .3 0 ^s .6
20	57 ^s .22 0 ^s .29	57 ^s .6 0 ^s .2	30 ^s .79 0 ^s .11	30 ^s .2 0 ^s .5	16 ^s .29 0 ^s .13	57 ^s .9 0 ^s .3
30	56 ^s .93 0 ^s .30	57 ^s .4 0 ^s .7	30 ^s .68 0 ^s .11	30 ^s .7 0 ^s .4	16 ^s .16 0 ^s .14	58 ^s .2 0 ^s .1
Aug. 9	56 ^s .63 0 ^s .29	56 ^s .7 1 ^s .1	30 ^s .57 0 ^s .12	31 ^s .1 0 ^s .2	16 ^s .02 0 ^s .14	58 ^s .3 0 ^s .2
19	56 ^s .34 0 ^s .27	55 ^s .6 1 ^s .5	30 ^s .45 0 ^s .11	31 ^s .3 0 ^s .1	15 ^s .88 0 ^s .14	58 ^s .1 0 ^s .5
29	56 ^s .07 0 ^s .24	54 ^s .1 1 ^s .8	30 ^s .34 0 ^s .09	31 ^s .4 0 ^s .0	15 ^s .74 0 ^s .12	57 ^s .6 0 ^s .8
Sept. 8	55 ^s .83 0 ^s .19	52 ^s .3 2 ^s .1	30 ^s .25 0 ^s .08	31 ^s .4 0 ^s .3	15 ^s .62 0 ^s .10	56 ^s .8 1 ^s .1
18	55 ^s .64 0 ^s .13	50 ^s .2 2 ^s .3	30 ^s .17 0 ^s .05	31 ^s .1 0 ^s .5	15 ^s .52 0 ^s .08	55 ^s .7 1 ^s .4
28	55 ^s .51 0 ^s .05	47 ^s .9 2 ^s .4	30 ^s .12 0 ^s .01	30 ^s .6 0 ^s .7	15 ^s .44 0 ^s .04	54 ^s .3 1 ^s .6
Oct. 8	55 ^s .46 0 ^s .03	45 ^s .5 2 ^s .4	30 ^s .11 0 ^s .03	29 ^s .9 0 ^s .9	15 ^s .40 0 ^s .00	52 ^s .7 2 ^s .0
18	55 ^s .49 0 ^s .14	43 ^s .1 2 ^s .5	30 ^s .14 0 ^s .08	29 ^s .0 1 ^s .3	15 ^s .40 0 ^s .04	50 ^s .7 2 ^s .2
28	55 ^s .63 0 ^s .21	40 ^s .6 2 ^s .1	30 ^s .22 0 ^s .12	27 ^s .7 1 ^s .4	{15 ^s .41} 0 ^s .09	{48 ^s .1} 2 ^s .4
Nov. 7	55 ^s .84 0 ^s .30	38 ^s .5 1 ^s .8	30 ^s .34 0 ^s .17	26 ^s .3 1 ^s .7	15 ^s .54 0 ^s .15	45 ^s .9 2 ^s .6
17	56 ^s .14 0 ^s .39	36 ^s .7 1 ^s .4	30 ^s .51 0 ^s .22	24 ^s .6 1 ^s .8	15 ^s .69 0 ^s .20	43 ^s .3 2 ^s .8
27	56 ^s .53 0 ^s .46	35 ^s .3 1 ^s .0	30 ^s .73 0 ^s .26	22 ^s .8 2 ^s .0	15 ^s .89 0 ^s .23	40 ^s .5 2 ^s .7
Dec. 7	56 ^s .99 0 ^s .52	34 ^s .3 0 ^s .5	30 ^s .99 0 ^s .29	20 ^s .8 2 ^s .2	16 ^s .12 0 ^s .28	37 ^s .8 2 ^s .8
17	57 ^s .51 0 ^s .55	33 ^s .8 0 ^s .1	31 ^s .28 0 ^s .31	18 ^s .6 2 ^s .1	16 ^s .40 0 ^s .31	35 ^s .0 2 ^s .6
27	58 ^s .06 0 ^s .58	33 ^s .9 0 ^s .5	31 ^s .59 0 ^s .33	16 ^s .5 2 ^s .1	16 ^s .71 0 ^s .32	32 ^s .4 2 ^s .5
37	58 ^s .64 0 ^s .58	34 ^s .4 0 ^s .5	31 ^s .92 0 ^s .33	14 ^s .4 2 ^s .1	17 ^s .03 0 ^s .32	29 ^s .9 2 ^s .5

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	ρ Bootis.			α^3 Centauri.			ϵ Bootis.		
	R. A.	Dec. North.		R. A.	Dec. South.		R. A.	Dec. North.	
	^h 14	^m 25	[°] 30 ['] 58	^h 14	^m 30	[°] 60 ['] 14	^h 14	^m 38	[°] 27 ['] 39
Jan. 1	45 ^s 19 ^s	0 ^s 35	73 ^s 8 ^s	2 ^s 80 ^s	0 ^s 58	46 ^s 0 ^s	49 ^s 59 ^s	0 ^s 34	56 ^s 9 ^s
11	45 ^s 54 ^s	0 ^s 35	71 ^s 4 ^s	3 ^s 38 ^s	0 ^s 58	46 ^s 3 ^s	49 ^s 93 ^s	0 ^s 34	54 ^s 4 ^s
21	45 ^s 89 ^s	0 ^s 35	69 ^s 4 ^s	3 ^s 96 ^s	0 ^s 58	47 ^s 1 ^s	50 ^s 27 ^s	0 ^s 34	52 ^s 3 ^s
31	46 ^s 25 ^s	0 ^s 36	68 ^s 0 ^s	4 ^s 54 ^s	0 ^s 58	48 ^s 4 ^s	50 ^s 62 ^s	0 ^s 35	50 ^s 7 ^s
		0 ^s 34			0 ^s 56			0 ^s 34	
Feb. 10	46 ^s 59 ^s	0 ^s 32	66 ^s 9 ^s	5 ^s 10 ^s	0 ^s 53	50 ^s 0 ^s	50 ^s 96 ^s	0 ^s 32	49 ^s 5 ^s
20	46 ^s 91 ^s	0 ^s 30	66 ^s 5 ^s	5 ^s 63 ^s	0 ^s 49	52 ^s 0 ^s	51 ^s 28 ^s	0 ^s 30	48 ^s 8 ^s
Mar. 2	47 ^s 21 ^s	0 ^s 26	66 ^s 5 ^s	6 ^s 12 ^s	0 ^s 45	54 ^s 3 ^s	51 ^s 58 ^s	0 ^s 26	48 ^s 7 ^s
12	47 ^s 47 ^s	0 ^s 23	67 ^s 1 ^s	6 ^s 57 ^s	0 ^s 39	56 ^s 8 ^s	51 ^s 84 ^s	0 ^s 24	49 ^s 1 ^s
		0 ^s 19			0 ^s 34			0 ^s 20	
Apr. 1	47 ^s 89 ^s	0 ^s 15	69 ^s 5 ^s	7 ^s 30 ^s	0 ^s 27	62 ^s 3 ^s	52 ^s 28 ^s	0 ^s 16	51 ^s 1 ^s
11	48 ^s 04 ^s	0 ^s 11	71 ^s 3 ^s	7 ^s 57 ^s	0 ^s 22	65 ^s 1 ^s	52 ^s 44 ^s	0 ^s 13	52 ^s 7 ^s
21	48 ^s 15 ^s	0 ^s 08	73 ^s 2 ^s	7 ^s 79 ^s	0 ^s 16	68 ^s 0 ^s	52 ^s 57 ^s	0 ^s 09	54 ^s 6 ^s
		0 ^s 06			0 ^s 10			0 ^s 06	
May 1	48 ^s 23 ^s	0 ^s 04	75 ^s 4 ^s	7 ^s 95 ^s	0 ^s 07	70 ^s 7 ^s	52 ^s 66 ^s	0 ^s 06	56 ^s 5 ^s
11	48 ^s 27 ^s	0 ^s 00	77 ^s 5 ^s	8 ^s 05 ^s	0 ^s 04	73 ^s 4 ^s	52 ^s 72 ^s	0 ^s 02	58 ^s 6 ^s
21	48 ^s 27 ^s	0 ^s 02	79 ^s 7 ^s	8 ^s 09 ^s	0 ^s 02	75 ^s 9 ^s	52 ^s 74 ^s	0 ^s 01	60 ^s 7 ^s
31	48 ^s 25 ^s	0 ^s 06	81 ^s 7 ^s	8 ^s 07 ^s	0 ^s 08	78 ^s 2 ^s	52 ^s 73 ^s	0 ^s 03	62 ^s 7 ^s
		0 ^s 08			0 ^s 14			0 ^s 07	
June 10	48 ^s 19 ^s	0 ^s 11	83 ^s 6 ^s	7 ^s 99 ^s	0 ^s 19	80 ^s 2 ^s	52 ^s 70 ^s	0 ^s 09	64 ^s 6 ^s
20	48 ^s 11 ^s	0 ^s 12	85 ^s 4 ^s	7 ^s 85 ^s	0 ^s 23	82 ^s 0 ^s	52 ^s 63 ^s	0 ^s 13	66 ^s 3 ^s
30	48 ^s 00 ^s	0 ^s 15	86 ^s 7 ^s	7 ^s 66 ^s	0 ^s 27	83 ^s 4 ^s	52 ^s 54 ^s	0 ^s 17	67 ^s 8 ^s
July 10	47 ^s 88 ^s	0 ^s 16	87 ^s 8 ^s	7 ^s 43 ^s	0 ^s 31	84 ^s 4 ^s	52 ^s 42 ^s	0 ^s 21	68 ^s 9 ^s
		0 ^s 18			0 ^s 35			0 ^s 25	
20	47 ^s 73 ^s	0 ^s 19	88 ^s 7 ^s	7 ^s 16 ^s	0 ^s 39	85 ^s 0 ^s	52 ^s 29 ^s	0 ^s 29	69 ^s 8 ^s
30	47 ^s 57 ^s	0 ^s 17	89 ^s 1 ^s	6 ^s 85 ^s	0 ^s 43	85 ^s 1 ^s	52 ^s 14 ^s	0 ^s 33	70 ^s 4 ^s
Aug. 9	47 ^s 41 ^s	0 ^s 17	89 ^s 2 ^s	6 ^s 53 ^s	0 ^s 47	84 ^s 8 ^s	51 ^s 93 ^s	0 ^s 37	70 ^s 6 ^s
19	47 ^s 24 ^s	0 ^s 17	88 ^s 9 ^s	6 ^s 21 ^s	0 ^s 51	84 ^s 1 ^s	51 ^s 82 ^s	0 ^s 41	70 ^s 5 ^s
		0 ^s 19			0 ^s 55			0 ^s 45	
29	47 ^s 07 ^s	0 ^s 15	88 ^s 2 ^s	5 ^s 89 ^s	0 ^s 59	82 ^s 9 ^s	51 ^s 65 ^s	0 ^s 49	70 ^s 0 ^s
Sept. 8	46 ^s 92 ^s	0 ^s 14	87 ^s 2 ^s	5 ^s 60 ^s	0 ^s 63	81 ^s 4 ^s	51 ^s 50 ^s	0 ^s 53	69 ^s 2 ^s
18	46 ^s 78 ^s	0 ^s 11	85 ^s 8 ^s	5 ^s 34 ^s	0 ^s 67	79 ^s 6 ^s	51 ^s 36 ^s	0 ^s 57	68 ^s 0 ^s
28	46 ^s 67 ^s	0 ^s 07	84 ^s 0 ^s	5 ^s 14 ^s	0 ^s 71	77 ^s 5 ^s	51 ^s 24 ^s	0 ^s 61	66 ^s 4 ^s
		0 ^s 09			0 ^s 75			0 ^s 65	
Oct. 8	46 ^s 60 ^s	0 ^s 03	82 ^s 0 ^s	5 ^s 02 ^s	0 ^s 79	75 ^s 2 ^s	51 ^s 16 ^s	0 ^s 69	64 ^s 6 ^s
18	46 ^s 57 ^s	0 ^s 01	79 ^s 7 ^s	4 ^s 97 ^s	0 ^s 83	72 ^s 8 ^s	51 ^s 12 ^s	0 ^s 73	62 ^s 4 ^s
28	46 ^s 58 ^s	0 ^s 08	76 ^s 9 ^s	5 ^s 00 ^s	0 ^s 87	70 ^s 4 ^s	51 ^s 13 ^s	0 ^s 77	59 ^s 9 ^s
Nov. 7	46 ^s 66 ^s	0 ^s 13	73 ^s 8 ^s	5 ^s 16 ^s	0 ^s 91	67 ^s 9 ^s	51 ^s 19 ^s	0 ^s 81	57 ^s 0 ^s
		0 ^s 15			0 ^s 95			0 ^s 85	
17	46 ^s 79 ^s	0 ^s 18	70 ^s 8 ^s	5 ^s 39 ^s	0 ^s 99	65 ^s 9 ^s	51 ^s 30 ^s	0 ^s 89	54 ^s 2 ^s
27	46 ^s 97 ^s	0 ^s 23	67 ^s 7 ^s	5 ^s 72 ^s	0 ^s 103	64 ^s 1 ^s	51 ^s 47 ^s	0 ^s 93	51 ^s 2 ^s
Dec. 7	47 ^s 20 ^s	0 ^s 27	64 ^s 6 ^s	6 ^s 12 ^s	0 ^s 107	62 ^s 8 ^s	51 ^s 68 ^s	0 ^s 97	48 ^s 2 ^s
17	47 ^s 47 ^s	0 ^s 31	61 ^s 6 ^s	6 ^s 59 ^s	0 ^s 111	61 ^s 9 ^s	51 ^s 94 ^s	0 ^s 101	45 ^s 2 ^s
		0 ^s 33			0 ^s 115			0 ^s 105	
27	47 ^s 78 ^s	0 ^s 33	58 ^s 8 ^s	7 ^s 11 ^s	0 ^s 119	61 ^s 4 ^s	52 ^s 24 ^s	0 ^s 109	42 ^s 4 ^s
37	48 ^s 11 ^s	0 ^s 33	56 ^s 1 ^s	7 ^s 67 ^s	0 ^s 123	61 ^s 5 ^s	52 ^s 56 ^s	0 ^s 113	39 ^s 9 ^s

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Libræ.		β Ursæ Minoris.		ψ Bootis.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	h m	° '	h m	° '	h m	° '
	14 43	15 27	14 51	74 43	14 58	27 29
Jan. 1	4 ^h 73 ^m	16 [°] 5 [']	8 ^h 22 ^m	28 [°] 8 [']	24 ^h 08 ^m	41 [°] 6 [']
11	5 ^h 07 ^m 0 ^s 34	18 [°] 1 ['] 1 ^s 6	9 ^h 00 ^m 0 ^s 78	26 [°] 5 ['] 2 ^s 3	24 ^h 40 ^m 0 ^s 32	39 [°] 1 ['] 2 ^s 5
21	5 ^h 41 ^m 0 ^s 34	19 [°] 8 ['] 1 ^s 7	9 ^h 84 ^m 0 ^s 84	24 [°] 8 ['] 1 ^s 7	24 ^h 74 ^m 0 ^s 34	37 [°] 0 ['] 2 ^s 1
31	5 ^h 75 ^m 0 ^s 34	21 [°] 4 ['] 1 ^s 6	10 ^h 72 ^m 0 ^s 88	23 [°] 7 ['] 1 ^s 1	25 ^h 08 ^m 0 ^s 34	35 [°] 2 ['] 1 ^s 8
	0 ^s 33	1 ^s 7	0 ^s 89	0 ^s 4	0 ^s 34	1 ^s 2
Feb. 10	6 ^h 08 ^m	23 [°] 1 [']	11 ^h 61 ^m	23 [°] 3 [']	25 ^h 42 ^m	34 [°] 0 [']
20	6 ^h 40 ^m 0 ^s 32	24 [°] 6 ['] 1 ^s 5	12 ^h 48 ^m 0 ^s 87	23 [°] 6 ['] 0 ^s 3	25 ^h 74 ^m 0 ^s 32	33 [°] 2 ['] 0 ^s 8
Mar. 2	6 ^h 69 ^m 0 ^s 29	26 [°] 0 ['] 1 ^s 4	13 ^h 29 ^m 0 ^s 81	24 [°] 5 ['] 0 ^s 9	26 ^h 05 ^m 0 ^s 31	33 [°] 0 ['] 2 ^s 2
12	6 ^h 96 ^m 0 ^s 27	27 [°] 2 ['] 1 ^s 2	14 ^h 02 ^m 0 ^s 73	26 [°] 0 ['] 1 ^s 5	26 ^h 33 ^m 0 ^s 28	33 [°] 3 ['] 0 ^s 3
	0 ^s 24	1 ^s 1	0 ^s 63	2 ^s 1	0 ^s 25	0 ^s 7
Apr. 22	7 ^h 20 ^m 0 ^s 21	28 [°] 3 ['] 0 ^s 9	14 ^h 65 ^m 0 ^s 51	28 [°] 1 ['] 2 ^s 5	26 ^h 58 ^m 0 ^s 22	34 [°] 0 ['] 1 ^s 2
1	7 ^h 41 ^m 0 ^s 18	29 [°] 2 ['] 0 ^s 7	15 ^h 16 ^m 0 ^s 37	30 [°] 6 ['] 2 ^s 8	26 ^h 80 ^m 0 ^s 18	35 [°] 2 ['] 1 ^s 5
11	7 ^h 59 ^m 0 ^s 15	29 [°] 9 ['] 0 ^s 5	15 ^h 53 ^m 0 ^s 23	33 [°] 4 ['] 3 ^s 1	26 ^h 98 ^m 0 ^s 14	36 [°] 7 ['] 1 ^s 8
21	7 ^h 74 ^m	30 [°] 4 ['] 0 ^s 4	15 ^h 76 ^m 0 ^s 08	36 [°] 5 ['] 3 ^s 2	27 ^h 12 ^m 0 ^s 11	38 [°] 5 ['] 2 ^s 0
May 1	7 ^h 86 ^m 0 ^s 10	30 [°] 8 ['] 0 ^s 2	15 ^h 84 ^m 0 ^s 06	39 [°] 7 ['] 3 ^s 1	27 ^h 23 ^m 0 ^s 08	40 [°] 5 ['] 2 ^s 2
11	7 ^h 96 ^m 0 ^s 06	31 [°] 0 ['] 0 ^s 2	15 ^h 78 ^m 0 ^s 19	42 [°] 8 ['] 3 ^s 1	27 ^h 31 ^m 0 ^s 04	42 [°] 7 ['] 2 ^s 1
21	8 ^h 02 ^m 0 ^s 04	31 [°] 2 ['] 0 ^s 0	15 ^h 59 ^m 0 ^s 32	45 [°] 9 ['] 2 ^s 8	27 ^h 35 ^m 0 ^s 02	44 [°] 8 ['] 2 ^s 1
31	8 ^h 06 ^m 0 ^s 00	31 [°] 2 ['] 0 ^s 1	15 ^h 27 ^m 0 ^s 44	48 [°] 7 ['] 2 ^s 5	27 ^h 37 ^m 0 ^s 02	46 [°] 9 ['] 2 ^s 0
June 10	8 ^h 06 ^m 0 ^s 02	31 [°] 1 ['] 0 ^s 2	14 ^h 83 ^m 0 ^s 54	51 [°] 2 ['] 2 ^s 1	27 ^h 35 ^m 0 ^s 06	48 [°] 9 ['] 1 ^s 9
20	8 ^h 04 ^m 0 ^s 04	30 [°] 9 ['] 0 ^s 2	14 ^h 29 ^m 0 ^s 63	53 [°] 3 ['] 1 ^s 7	27 ^h 29 ^m 0 ^s 08	50 [°] 8 ['] 1 ^s 6
30	8 ^h 00 ^m 0 ^s 07	30 [°] 7 ['] 0 ^s 3	13 ^h 66 ^m 0 ^s 70	55 [°] 0 ['] 1 ^s 2	27 ^h 21 ^m 0 ^s 10	52 [°] 4 ['] 1 ^s 3
July 10	7 ^h 93 ^m	30 [°] 4 ['] 0 ^s 4	12 ^h 96 ^m 0 ^s 75	56 [°] 2 ['] 0 ^s 7	27 ^h 11 ^m 0 ^s 13	53 [°] 7 ['] 1 ^s 1
20	7 ^h 83 ^m 0 ^s 11	30 [°] 0 ['] 0 ^s 4	12 ^h 21 ^m 0 ^s 79	56 [°] 9 ['] 0 ^s 2	26 ^h 98 ^m 0 ^s 15	54 [°] 8 ['] 0 ^s 7
30	7 ^h 72 ^m 0 ^s 12	29 [°] 6 ['] 0 ^s 5	11 ^h 42 ^m 0 ^s 81	57 [°] 1 ['] 0 ^s 4	26 ^h 83 ^m 0 ^s 16	55 [°] 5 ['] 0 ^s 3
Aug. 9	7 ^h 60 ^m 0 ^s 14	29 [°] 1 ['] 0 ^s 5	10 ^h 61 ^m 0 ^s 81	56 [°] 7 ['] 0 ^s 9	26 ^h 67 ^m 0 ^s 17	55 [°] 8 ['] 0 ^s 0
19	7 ^h 46 ^m 0 ^s 13	28 [°] 6 ['] 0 ^s 6	9 ^h 80 ^m 0 ^s 78	55 [°] 8 ['] 1 ^s 4	26 ^h 50 ^m 0 ^s 18	55 [°] 8 ['] 0 ^s 3
Sept. 29	7 ^h 33 ^m 0 ^s 13	28 [°] 0 ['] 0 ^s 5	9 ^h 02 ^m 0 ^s 75	54 [°] 4 ['] 1 ^s 9	26 ^h 32 ^m 0 ^s 17	55 [°] 5 ['] 0 ^s 7
8	7 ^h 20 ^m 0 ^s 11	27 [°] 5 ['] 0 ^s 4	8 ^h 27 ^m 0 ^s 70	52 [°] 5 ['] 2 ^s 3	26 ^h 15 ^m 0 ^s 15	54 [°] 8 ['] 1 ^s 0
18	7 ^h 09 ^m 0 ^s 08	27 [°] 1 ['] 0 ^s 5	7 ^h 57 ^m 0 ^s 61	50 [°] 2 ['] 2 ^s 7	26 ^h 00 ^m 0 ^s 13	53 [°] 8 ['] 1 ^s 4
28	7 ^h 01 ^m 0 ^s 06	26 [°] 6 ['] 0 ^s 3	6 ^h 96 ^m 0 ^s 52	47 [°] 5 ['] 3 ^s 1	25 ^h 87 ^m 0 ^s 10	52 [°] 4 ['] 1 ^s 8
Oct. 8	6 ^h 95 ^m 0 ^s 01	26 [°] 3 ['] 0 ^s 2	6 ^h 44 ^m 0 ^s 40	44 [°] 4 ['] 3 ^s 4	25 ^h 77 ^m 0 ^s 06	50 [°] 6 ['] 2 ^s 0
18	6 ^h 94 ^m 0 ^s 03	26 [°] 1 ['] 0 ^s 0	6 ^h 04 ^m 0 ^s 28	41 [°] 0 ['] 3 ^s 7	25 ^h 71 ^m 0 ^s 02	48 [°] 6 ['] 2 ^s 4
28	6 ^h 97 ^m 0 ^s 09	26 [°] 1 ['] 0 ^s 3	5 ^h 76 ^m 0 ^s 14	37 [°] 3 ['] 3 ^s 8	25 ^h 69 ^m 0 ^s 03	46 [°] 2 ['] 2 ^s 6
Nov. 7	7 ^h 06 ^m 0 ^s 14	26 [°] 4 ['] 0 ^s 5	{11:45}	{11:45}	25 ^h 72 ^m 0 ^s 10	43 [°] 6 ['] 3 ^s 2
17	7 ^h 20 ^m 0 ^s 18	26 [°] 9 ['] 0 ^s 7	5 ^h 65 ^m 0 ^s 18	29 [°] 3 ['] 3 ^s 8	25 ^h 82 ^m 0 ^s 14	40 [°] 5 ['] 3 ^s 0
27	7 ^h 38 ^m 0 ^s 24	27 [°] 6 ['] 1 ^s 0	5 ^h 83 ^m 0 ^s 33	25 [°] 5 ['] 3 ^s 7	25 ^h 96 ^m 0 ^s 20	37 [°] 5 ['] 3 ^s 0
Dec. 7	7 ^h 62 ^m 0 ^s 27	28 [°] 6 ['] 1 ^s 2	6 ^h 16 ^m 0 ^s 48	21 [°] 8 ['] 3 ^s 4	26 ^h 16 ^m 0 ^s 24	34 [°] 5 ['] 2 ^s 9
17	7 ^h 89 ^m 0 ^s 30	29 [°] 8 ['] 1 ^s 3	6 ^h 64 ^m 0 ^s 61	18 [°] 4 ['] 3 ^s 0	26 ^h 40 ^m 0 ^s 27	31 [°] 6 ['] 2 ^s 9
27	8 ^h 19 ^m 0 ^s 33	31 [°] 1 ['] 1 ^s 5	7 ^h 25 ^m 0 ^s 72	15 [°] 4 ['] 2 ^s 6	26 ^h 67 ^m 0 ^s 31	28 [°] 7 ['] 2 ^s 6
37	8 ^h 52 ^m	32 [°] 6 [']	7 ^h 97 ^m	12 [°] 8 [']	26 ^h 98 ^m	26 [°] 1 [']

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	β Libræ.		α Coronæ Borealis.		α Serpentis.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 15 ^m 9	[°] 8 ['] 51	^h 15 ^m 28	[°] 27 ['] 10	^h 15 ^m 37	[°] 6 ['] 51
Jan. 1	25 ^s 03 ^s 0 ^s 32	42 ^s 7 ^s 1 ^s 7	42 ^s 65 ^s 0 ^s 31	73 ^s 0 ^s 2 ^s 6	19 ^s 01 ^s 0 ^s 49	67 ^s 5 ^s 2 ^s 1
11	25 ^s 35 ^s 0 ^s 33	44 ^s 4 ^s 1 ^s 7	42 ^s 96 ^s 0 ^s 32	70 ^s 4 ^s 2 ^s 3	19 ^s 30 ^s 0 ^s 31	65 ^s 4 ^s 1 ^s 9
21	25 ^s 68 ^s 0 ^s 33	46 ^s 1 ^s 1 ^s 6	43 ^s 28 ^s 0 ^s 34	68 ^s 1 ^s 1 ^s 9	19 ^s 61 ^s 0 ^s 32	63 ^s 5 ^s 1 ^s 8
31	26 ^s 01 ^s 0 ^s 33	47 ^s 7 ^s 1 ^s 5	43 ^s 62 ^s 0 ^s 33	66 ^s 2 ^s 1 ^s 4	19 ^s 93 ^s 0 ^s 32	61 ^s 7 ^s 1 ^s 5
Feb. 10	26 ^s 34 ^s 0 ^s 31	49 ^s 2 ^s 1 ^s 3	43 ^s 95 ^s 0 ^s 33	64 ^s 8 ^s 0 ^s 9	20 ^s 25 ^s 0 ^s 31	60 ^s 2 ^s 1 ^s 1
20	26 ^s 65 ^s 0 ^s 30	50 ^s 5 ^s 1 ^s 2	44 ^s 28 ^s 0 ^s 32	63 ^s 9 ^s 0 ^s 4	20 ^s 56 ^s 0 ^s 31	59 ^s 1 ^s 0 ^s 8
Mar. 2	26 ^s 95 ^s 0 ^s 28	51 ^s 7 ^s 0 ^s 9	44 ^s 60 ^s 0 ^s 30	63 ^s 5 ^s 0 ^s 1	20 ^s 87 ^s 0 ^s 28	58 ^s 3 ^s 0 ^s 4
12	27 ^s 23 ^s 0 ^s 25	52 ^s 6 ^s 0 ^s 7	44 ^s 90 ^s 0 ^s 27	63 ^s 6 ^s 0 ^s 6	21 ^s 15 ^s 0 ^s 26	57 ^s 9 ^s 0 ^s 1
22	27 ^s 48 ^s 0 ^s 22	53 ^s 3 ^s 0 ^s 4	45 ^s 17 ^s 0 ^s 24	64 ^s 2 ^s 1 ^s 1	21 ^s 41 ^s 0 ^s 24	57 ^s 8 ^s 0 ^s 3
Apr. 1	27 ^s 70 ^s 0 ^s 20	53 ^s 7 ^s 0 ^s 3	45 ^s 41 ^s 0 ^s 21	65 ^s 3 ^s 1 ^s 5	21 ^s 65 ^s 0 ^s 21	58 ^s 1 ^s 0 ^s 5
11	27 ^s 90 ^s 0 ^s 17	54 ^s 0 ^s 0 ^s 1	45 ^s 62 ^s 0 ^s 18	66 ^s 8 ^s 1 ^s 7	21 ^s 86 ^s 0 ^s 19	58 ^s 6 ^s 0 ^s 9
21	28 ^s 07 ^s 0 ^s 14	54 ^s 1 ^s 0 ^s 1	45 ^s 80 ^s 0 ^s 14	68 ^s 5 ^s 2 ^s 0	22 ^s 05 ^s 0 ^s 16	59 ^s 5 ^s 1 ^s 0
May 1	28 ^s 21 ^s 0 ^s 12	54 ^s 0 ^s 0 ^s 2	45 ^s 94 ^s 0 ^s 11	70 ^s 5 ^s 2 ^s 3	22 ^s 21 ^s 0 ^s 13	60 ^s 5 ^s 1 ^s 2
11	28 ^s 33 ^s 0 ^s 08	53 ^s 8 ^s 0 ^s 4	46 ^s 05 ^s 0 ^s 07	72 ^s 8 ^s 2 ^s 2	22 ^s 34 ^s 0 ^s 10	61 ^s 7 ^s 1 ^s 3
21	28 ^s 41 ^s 0 ^s 06	53 ^s 4 ^s 0 ^s 4	46 ^s 12 ^s 0 ^s 04	75 ^s 0 ^s 2 ^s 2	22 ^s 44 ^s 0 ^s 07	63 ^s 0 ^s 1 ^s 3
31	28 ^s 47 ^s 0 ^s 03	53 ^s 0 ^s 0 ^s 4	46 ^s 16 ^s 0 ^s 01	77 ^s 2 ^s 2 ^s 2	22 ^s 51 ^s 0 ^s 04	64 ^s 3 ^s 1 ^s 4
June 10	28 ^s 50 ^s 0 ^s 00	52 ^s 6 ^s 0 ^s 5	46 ^s 17 ^s 0 ^s 03	79 ^s 4 ^s 2 ^s 0	22 ^s 55 ^s 0 ^s 01	65 ^s 7 ^s 1 ^s 3
20	28 ^s 50 ^s 0 ^s 03	52 ^s 1 ^s 0 ^s 5	46 ^s 14 ^s 0 ^s 06	81 ^s 4 ^s 1 ^s 8	22 ^s 56 ^s 0 ^s 03	67 ^s 0 ^s 1 ^s 2
30	28 ^s 47 ^s 0 ^s 06	51 ^s 6 ^s 0 ^s 5	46 ^s 08 ^s 0 ^s 09	83 ^s 2 ^s 1 ^s 5	22 ^s 53 ^s 0 ^s 05	68 ^s 2 ^s 1 ^s 0
July 10	28 ^s 41 ^s 0 ^s 08	51 ^s 1 ^s 0 ^s 5	45 ^s 99 ^s 0 ^s 12	84 ^s 7 ^s 1 ^s 3	22 ^s 48 ^s 0 ^s 08	69 ^s 2 ^s 1 ^s 0
20	28 ^s 33 ^s 0 ^s 11	50 ^s 6 ^s 0 ^s 5	45 ^s 87 ^s 0 ^s 14	86 ^s 0 ^s 1 ^s 0	22 ^s 40 ^s 0 ^s 10	70 ^s 2 ^s 0 ^s 8
30	28 ^s 22 ^s 0 ^s 12	50 ^s 1 ^s 0 ^s 5	45 ^s 73 ^s 0 ^s 16	87 ^s 0 ^s 0 ^s 6	22 ^s 30 ^s 0 ^s 12	71 ^s 0 ^s 0 ^s 6
Aug. 9	28 ^s 10 ^s 0 ^s 13	49 ^s 6 ^s 0 ^s 4	45 ^s 57 ^s 0 ^s 18	87 ^s 6 ^s 0 ^s 3	22 ^s 18 ^s 0 ^s 14	71 ^s 6 ^s 0 ^s 4
19	27 ^s 97 ^s 0 ^s 14	49 ^s 2 ^s 0 ^s 3	45 ^s 39 ^s 0 ^s 18	87 ^s 9 ^s 0 ^s 1	22 ^s 04 ^s 0 ^s 15	72 ^s 0 ^s 0 ^s 3
29	27 ^s 83 ^s 0 ^s 13	48 ^s 9 ^s 0 ^s 4	45 ^s 21 ^s 0 ^s 18	87 ^s 8 ^s 0 ^s 5	21 ^s 89 ^s 0 ^s 15	72 ^s 3 ^s 0 ^s 0
Sept. 8	27 ^s 70 ^s 0 ^s 13	48 ^s 5 ^s 0 ^s 2	45 ^s 03 ^s 0 ^s 17	87 ^s 3 ^s 0 ^s 8	21 ^s 74 ^s 0 ^s 14	72 ^s 3 ^s 0 ^s 3
18	27 ^s 57 ^s 0 ^s 10	48 ^s 3 ^s 0 ^s 1	44 ^s 86 ^s 0 ^s 15	86 ^s 5 ^s 1 ^s 2	21 ^s 60 ^s 0 ^s 13	72 ^s 0 ^s 0 ^s 4
28	27 ^s 47 ^s 0 ^s 08	48 ^s 2 ^s 0 ^s 0	44 ^s 71 ^s 0 ^s 13	85 ^s 3 ^s 1 ^s 6	21 ^s 47 ^s 0 ^s 11	71 ^s 6 ^s 0 ^s 7
Oct. 8	27 ^s 39 ^s 0 ^s 04	48 ^s 2 ^s 0 ^s 2	44 ^s 58 ^s 0 ^s 09	83 ^s 7 ^s 1 ^s 9	21 ^s 36 ^s 0 ^s 07	70 ^s 9 ^s 0 ^s 9
18	27 ^s 35 ^s 0 ^s 00	48 ^s 4 ^s 0 ^s 3	44 ^s 49 ^s 0 ^s 05	81 ^s 8 ^s 2 ^s 2	21 ^s 29 ^s 0 ^s 03	70 ^s 0 ^s 1 ^s 2
28	27 ^s 35 ^s 0 ^s 05	48 ^s 7 ^s 0 ^s 6	44 ^s 44 ^s 0 ^s 00	79 ^s 6 ^s 2 ^s 4	21 ^s 26 ^s 0 ^s 01	68 ^s 8 ^s 1 ^s 4
Nov. 7	27 ^s 40 ^s 0 ^s 12	49 ^s 3 ^s 0 ^s 9	44 ^s 44 ^s 0 ^s 06	77 ^s 2 ^s 3 ^s 0	21 ^s 27 ^s 0 ^s 06	67 ^s 4 ^s 1 ^s 6
17	27 ^s 52 ^s 0 ^s 15	50 ^s 2 ^s 1 ^s 0	44 ^s 50 ^s 0 ^s 11	74 ^s 2 ^s 2 ^s 9	21 ^s 33 ^s 0 ^s 13	65 ^s 8 ^s 2 ^s 1
27	27 ^s 67 ^s 0 ^s 20	51 ^s 2 ^s 1 ^s 3	44 ^s 61 ^s 0 ^s 16	71 ^s 3 ^s 3 ^s 0	21 ^s 46 ^s 0 ^s 16	63 ^s 7 ^s 2 ^s 0
Dec. 7	27 ^s 87 ^s 0 ^s 25	52 ^s 5 ^s 1 ^s 4	44 ^s 77 ^s 0 ^s 21	68 ^s 3 ^s 3 ^s 0	21 ^s 62 ^s 0 ^s 21	61 ^s 7 ^s 2 ^s 1
17	28 ^s 12 ^s 0 ^s 28	53 ^s 9 ^s 1 ^s 5	44 ^s 98 ^s 0 ^s 25	65 ^s 3 ^s 2 ^s 9	21 ^s 83 ^s 0 ^s 25	59 ^s 6 ^s 2 ^s 2
27	28 ^s 40 ^s 0 ^s 30	55 ^s 4 ^s 1 ^s 6	45 ^s 23 ^s 0 ^s 29	62 ^s 4 ^s 2 ^s 7	22 ^s 08 ^s 0 ^s 28	57 ^s 4 ^s 2 ^s 1
37	28 ^s 70 ^s 0 ^s 30	57 ^s 0 ^s 1 ^s 6	45 ^s 52 ^s 0 ^s 29	59 ^s 7 ^s 2 ^s 6	22 ^s 36 ^s 0 ^s 28	55 ^s 3 ^s 2 ^s 1

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	ζ Ursa Minoris.		β Scorp.ii.		δ Ophiuchi.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. South.
	^h 15 ^m 49	[°] 78 ['] 13	^h 15 ^m 57	[°] 19 ['] 25	^h 16 ^m 6	[°] 3 ['] 19
Jan. 1	6 ^h 95 ^m 0 ^h 77 ^m	12 ^h 6 ^m 2 ^h 8 ^m	13 ^h 98 ^m 0 ^h 31 ^m	3 ^h 1 ^m 1 ^h 0 ^m	56 ^h 95 ^m 0 ^h 29 ^m	50 ^h 7 ^m 1 ^h 7 ^m
11	7 ^h 72 ^m 0 ^h 91 ^m	9 ^h 8 ^m 2 ^h 3 ^m	14 ^h 29 ^m 0 ^h 33 ^m	4 ^h 1 ^m 1 ^h 1 ^m	57 ^h 24 ^m 0 ^h 30 ^m	52 ^h 4 ^m 1 ^h 6 ^m
21	8 ^h 63 ^m 1 ^h 01 ^m	7 ^h 5 ^m 1 ^h 8 ^m	14 ^h 62 ^m 0 ^h 33 ^m	5 ^h 2 ^m 1 ^h 1 ^m	57 ^h 54 ^m 0 ^h 31 ^m	54 ^h 0 ^m 1 ^h 5 ^m
31	9 ^h 64 ^m 1 ^h 08 ^m	5 ^h 7 ^m 1 ^h 1 ^m	14 ^h 95 ^m 0 ^h 34 ^m	6 ^h 3 ^m 1 ^h 2 ^m	57 ^h 85 ^m 0 ^h 32 ^m	55 ^h 5 ^m 1 ^h 3 ^m
Feb. 10	10 ^h 72 ^m 1 ^h 11 ^m	4 ^h 6 ^m 0 ^h 4 ^m	15 ^h 29 ^m 0 ^h 34 ^m	7 ^h 5 ^m 1 ^h 1 ^m	58 ^h 17 ^m 0 ^h 31 ^m	56 ^h 8 ^m 1 ^h 2 ^m
20	11 ^h 83 ^m 1 ^h 09 ^m	4 ^h 2 ^m 0 ^h 2 ^m	15 ^h 63 ^m 0 ^h 33 ^m	8 ^h 6 ^m 1 ^h 0 ^m	58 ^h 48 ^m 0 ^h 31 ^m	58 ^h 0 ^m 0 ^h 9 ^m
Mar. 2	12 ^h 92 ^m 1 ^h 04 ^m	4 ^h 4 ^m 0 ^h 9 ^m	15 ^h 96 ^m 0 ^h 31 ^m	9 ^h 6 ^m 1 ^h 0 ^m	58 ^h 79 ^m 0 ^h 30 ^m	58 ^h 9 ^m 0 ^h 6 ^m
12	13 ^h 96 ^m 0 ^h 94 ^m	5 ^h 3 ^m 1 ^h 5 ^m	16 ^h 27 ^m 0 ^h 30 ^m	10 ^h 6 ^m 0 ^h 8 ^m	59 ^h 09 ^m 0 ^h 28 ^m	59 ^h 5 ^m 0 ^h 3 ^m
22	14 ^h 90 ^m 0 ^h 82 ^m	6 ^h 8 ^m 2 ^h 0 ^m	16 ^h 57 ^m 0 ^h 27 ^m	11 ^h 4 ^m 0 ^h 7 ^m	59 ^h 37 ^m 0 ^h 26 ^m	59 ^h 8 ^m 0 ^h 1 ^m
Apr. 1	15 ^h 72 ^m 0 ^h 68 ^m	8 ^h 8 ^m 2 ^h 5 ^m	16 ^h 84 ^m 0 ^h 25 ^m	12 ^h 1 ^m 0 ^h 5 ^m	59 ^h 63 ^m 0 ^h 24 ^m	59 ^h 9 ^m 0 ^h 2 ^m
11	16 ^h 40 ^m 0 ^h 52 ^m	11 ^h 3 ^m 2 ^h 9 ^m	17 ^h 09 ^m 0 ^h 23 ^m	12 ^h 6 ^m 0 ^h 5 ^m	59 ^h 87 ^m 0 ^h 21 ^m	59 ^h 7 ^m 0 ^h 4 ^m
21	16 ^h 92 ^m 0 ^h 33 ^m	14 ^h 2 ^m 3 ^h 0 ^m	17 ^h 32 ^m 0 ^h 20 ^m	13 ^h 1 ^m 0 ^h 3 ^m	60 ^h 08 ^m 0 ^h 19 ^m	59 ^h 3 ^m 0 ^h 5 ^m
May 1	17 ^h 25 ^m 0 ^h 15 ^m	17 ^h 2 ^m 3 ^h 2 ^m	17 ^h 52 ^m 0 ^h 17 ^m	13 ^h 4 ^m 0 ^h 2 ^m	60 ^h 27 ^m 0 ^h 17 ^m	58 ^h 8 ^m 0 ^h 7 ^m
11	17 ^h 40 ^m 0 ^h 04 ^m	20 ^h 4 ^m 3 ^h 3 ^m	17 ^h 69 ^m 0 ^h 14 ^m	13 ^h 6 ^m 0 ^h 2 ^m	60 ^h 44 ^m 0 ^h 13 ^m	58 ^h 1 ^m 0 ^h 9 ^m
21	17 ^h 36 ^m 0 ^h 22 ^m	23 ^h 7 ^m 3 ^h 1 ^m	17 ^h 83 ^m 0 ^h 11 ^m	13 ^h 8 ^m 0 ^h 1 ^m	60 ^h 57 ^m 0 ^h 11 ^m	57 ^h 2 ^m 0 ^h 8 ^m
31	17 ^h 14 ^m 0 ^h 40 ^m	26 ^h 8 ^m 2 ^h 9 ^m	17 ^h 94 ^m 0 ^h 08 ^m	13 ^h 9 ^m 0 ^h 0 ^m	60 ^h 68 ^m 0 ^h 07 ^m	56 ^h 4 ^m 0 ^h 9 ^m
June 10	16 ^h 74 ^m 0 ^h 55 ^m	29 ^h 7 ^m 2 ^h 7 ^m	18 ^h 02 ^m 0 ^h 04 ^m	13 ^h 9 ^m 0 ^h 0 ^m	60 ^h 75 ^m 0 ^h 04 ^m	55 ^h 5 ^m 0 ^h 9 ^m
20	16 ^h 19 ^m 0 ^h 70 ^m	32 ^h 4 ^m 2 ^h 3 ^m	18 ^h 06 ^m 0 ^h 01 ^m	13 ^h 9 ^m 0 ^h 0 ^m	60 ^h 79 ^m 0 ^h 01 ^m	54 ^h 6 ^m 0 ^h 9 ^m
30	15 ^h 49 ^m 0 ^h 83 ^m	34 ^h 7 ^m 1 ^h 9 ^m	18 ^h 07 ^m 0 ^h 03 ^m	13 ^h 9 ^m 0 ^h 1 ^m	60 ^h 80 ^m 0 ^h 02 ^m	53 ^h 7 ^m 0 ^h 8 ^m
July 10	14 ^h 66 ^m 0 ^h 94 ^m	36 ^h 6 ^m 1 ^h 5 ^m	18 ^h 04 ^m 0 ^h 06 ^m	13 ^h 8 ^m 0 ^h 2 ^m	60 ^h 78 ^m 0 ^h 06 ^m	52 ^h 9 ^m 0 ^h 7 ^m
20	13 ^h 72 ^m 1 ^h 02 ^m	38 ^h 1 ^m 1 ^h 0 ^m	17 ^h 98 ^m 0 ^h 09 ^m	13 ^h 6 ^m 0 ^h 2 ^m	60 ^h 72 ^m 0 ^h 09 ^m	52 ^h 2 ^m 0 ^h 6 ^m
30	12 ^h 70 ^m 1 ^h 08 ^m	39 ^h 1 ^m 0 ^h 5 ^m	17 ^h 89 ^m 0 ^h 12 ^m	13 ^h 4 ^m 0 ^h 2 ^m	60 ^h 63 ^m 0 ^h 11 ^m	51 ^h 6 ^m 0 ^h 6 ^m
Aug. 9	11 ^h 62 ^m 1 ^h 12 ^m	39 ^h 6 ^m 0 ^h 1 ^m	17 ^h 77 ^m 0 ^h 14 ^m	13 ^h 2 ^m 0 ^h 3 ^m	60 ^h 52 ^m 0 ^h 13 ^m	51 ^h 0 ^m 0 ^h 4 ^m
19	10 ^h 50 ^m 1 ^h 14 ^m	39 ^h 5 ^m 0 ^h 5 ^m	17 ^h 63 ^m 0 ^h 15 ^m	12 ^h 9 ^m 0 ^h 3 ^m	60 ^h 39 ^m 0 ^h 14 ^m	50 ^h 6 ^m 0 ^h 3 ^m
29	9 ^h 36 ^m 1 ^h 12 ^m	39 ^h 0 ^m 1 ^h 1 ^m	17 ^h 48 ^m 0 ^h 16 ^m	12 ^h 6 ^m 0 ^h 4 ^m	60 ^h 25 ^m 0 ^h 16 ^m	50 ^h 3 ^m 0 ^h 3 ^m
Sept. 8	8 ^h 24 ^m 1 ^h 08 ^m	37 ^h 9 ^m 1 ^h 5 ^m	17 ^h 32 ^m 0 ^h 15 ^m	12 ^h 2 ^m 0 ^h 5 ^m	60 ^h 09 ^m 0 ^h 15 ^m	50 ^h 0 ^m 0 ^h 1 ^m
18	7 ^h 16 ^m 1 ^h 02 ^m	36 ^h 4 ^m 2 ^h 0 ^m	17 ^h 17 ^m 0 ^h 13 ^m	11 ^h 7 ^m 0 ^h 4 ^m	59 ^h 94 ^m 0 ^h 14 ^m	49 ^h 9 ^m 0 ^h 1 ^m
28	6 ^h 14 ^m 0 ^h 92 ^m	34 ^h 4 ^m 2 ^h 5 ^m	17 ^h 04 ^m 0 ^h 12 ^m	11 ^h 3 ^m 0 ^h 4 ^m	59 ^h 80 ^m 0 ^h 11 ^m	50 ^h 0 ^m 0 ^h 2 ^m
Oct. 8	5 ^h 22 ^m 0 ^h 80 ^m	31 ^h 9 ^m 2 ^h 9 ^m	16 ^h 92 ^m 0 ^h 08 ^m	10 ^h 9 ^m 0 ^h 3 ^m	59 ^h 69 ^m 0 ^h 09 ^m	50 ^h 2 ^m 0 ^h 4 ^m
18	4 ^h 42 ^m 0 ^h 66 ^m	29 ^h 0 ^m 3 ^h 2 ^m	16 ^h 84 ^m 0 ^h 04 ^m	10 ^h 6 ^m 0 ^h 3 ^m	59 ^h 60 ^m 0 ^h 05 ^m	50 ^h 6 ^m 0 ^h 6 ^m
28	3 ^h 76 ^m 0 ^h 49 ^m	25 ^h 8 ^m 3 ^h 4 ^m	16 ^h 80 ^m 0 ^h 01 ^m	10 ^h 3 ^m 0 ^h 1 ^m	59 ^h 55 ^m 0 ^h 01 ^m	51 ^h 2 ^m 0 ^h 7 ^m
Nov. 7	3 ^h 27 ^m 0 ^h 31 ^m	22 ^h 4 ^m 3 ^h 7 ^m	16 ^h 81 ^m 0 ^h 06 ^m	10 ^h 2 ^m 0 ^h 0 ^m	59 ^h 54 ^m 0 ^h 04 ^m	51 ^h 9 ^m 1 ^h 0 ^m
17	2 ^h 96 ^m 0 ^h 12 ^m	18 ^h 7 ^m 4 ^h 1 ^m	16 ^h 87 ^m 0 ^h 13 ^m	10 ^h 2 ^m 0 ^h 2 ^m	59 ^h 58 ^m 0 ^h 10 ^m	52 ^h 9 ^m 1 ^h 3 ^m
27	2 ^h 84 ^m 0 ^h 11 ^m	14 ^h 6 ^m 3 ^h 7 ^m	17 ^h 00 ^m 0 ^h 17 ^m	10 ^h 4 ^m 0 ^h 4 ^m	59 ^h 68 ^m 0 ^h 15 ^m	54 ^h 2 ^m 1 ^h 4 ^m
Dec. 7	2 ^h 95 ^m 0 ^h 32 ^m	10 ^h 9 ^m 3 ^h 6 ^m	17 ^h 17 ^m 0 ^h 21 ^m	10 ^h 8 ^m 0 ^h 6 ^m	59 ^h 83 ^m 0 ^h 18 ^m	55 ^h 6 ^m 1 ^h 5 ^m
17	3 ^h 27 ^m 0 ^h 50 ^m	7 ^h 3 ^m 3 ^h 3 ^m	17 ^h 38 ^m 0 ^h 26 ^m	11 ^h 4 ^m 0 ^h 8 ^m	60 ^h 01 ^m 0 ^h 23 ^m	57 ^h 1 ^m 1 ^h 6 ^m
27	3 ^h 77 ^m 0 ^h 62 ^m	4 ^h 0 ^m 3 ^h 3 ^m	17 ^h 64 ^m 0 ^h 22 ^m	12 ^h 2 ^m 0 ^h 8 ^m	60 ^h 24 ^m 0 ^h 22 ^m	58 ^h 7 ^m 1 ^h 6 ^m

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Scorpii. (Antares)		η Draconis.		α Trianguli Australis.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. South.
	^h 16 ^m 20	[°] 26 ['] 6	^h 16 ^m 22	[°] 61 ['] 49	^h 16 ^m 33	[°] 68 ['] 45
Jan. 1	45 ^s .30 ^s	59 ^s .6 ^s	3 ^s .97 ^s	44 ^s .0 ^s	43 ^s .93 ^s	41 ^s .5 ^s
11	45 ^s .60 ^s	60 ^s .2 ^s	4 ^s .33 ^s	40 ^s .8 ^s	44 ^s .56 ^s	39 ^s .9 ^s
21	45 ^s .93 ^s	60 ^s .8 ^s	4 ^s .75 ^s	38 ^s .0 ^s	45 ^s .26 ^s	38 ^s .7 ^s
31	46 ^s .28 ^s	61 ^s .6 ^s	5 ^s .21 ^s	35 ^s .7 ^s	46 ^s .00 ^s	38 ^s .0 ^s
	0 ^s .35	0 ^s .9	0 ^s .50	1 ^s .7	0 ^s .77	0 ^s .4
Feb. 10	46 ^s .63 ^s	62 ^s .5 ^s	5 ^s .71 ^s	34 ^s .0 ^s	46 ^s .77 ^s	37 ^s .6 ^s
20	46 ^s .99 ^s	63 ^s .4 ^s	6 ^s .23 ^s	33 ^s .0 ^s	47 ^s .55 ^s	37 ^s .7 ^s
Mar. 2	47 ^s .33 ^s	64 ^s .2 ^s	6 ^s .75 ^s	32 ^s .6 ^s	48 ^s .35 ^s	38 ^s .2 ^s
12	47 ^s .67 ^s	65 ^s .1 ^s	7 ^s .26 ^s	32 ^s .9 ^s	49 ^s .14 ^s	39 ^s .1 ^s
	0 ^s .32	0 ^s .8	0 ^s .48	1 ^s .0	0 ^s .75	1 ^s .2
Apr. 22	47 ^s .99 ^s	65 ^s .9 ^s	7 ^s .74 ^s	33 ^s .9 ^s	49 ^s .89 ^s	40 ^s .3 ^s
1	48 ^s .30 ^s	66 ^s .7 ^s	8 ^s .18 ^s	35 ^s .5 ^s	50 ^s .60 ^s	41 ^s .9 ^s
11	48 ^s .58 ^s	67 ^s .4 ^s	8 ^s .57 ^s	37 ^s .6 ^s	51 ^s .26 ^s	43 ^s .7 ^s
21	48 ^s .84 ^s	68 ^s .0 ^s	8 ^s .90 ^s	40 ^s .1 ^s	51 ^s .86 ^s	45 ^s .8 ^s
	0 ^s .23	0 ^s .5	0 ^s .26	2 ^s .9	0 ^s .54	2 ^s .2
May 1	49 ^s .07 ^s	68 ^s .5 ^s	9 ^s .16 ^s	43 ^s .0 ^s	52 ^s .40 ^s	48 ^s .0 ^s
11	49 ^s .28 ^s	69 ^s .0 ^s	9 ^s .34 ^s	46 ^s .1 ^s	52 ^s .86 ^s	50 ^s .5 ^s
21	49 ^s .45 ^s	69 ^s .5 ^s	9 ^s .45 ^s	49 ^s .4 ^s	53 ^s .24 ^s	53 ^s .0 ^s
31	49 ^s .59 ^s	69 ^s .9 ^s	9 ^s .49 ^s	52 ^s .6 ^s	53 ^s .52 ^s	55 ^s .6 ^s
	0 ^s .10	0 ^s .4	0 ^s .03	3 ^s .2	0 ^s .20	2 ^s .6
June 10	49 ^s .69 ^s	70 ^s .3 ^s	9 ^s .46 ^s	55 ^s .8 ^s	53 ^s .72 ^s	58 ^s .2 ^s
20	49 ^s .76 ^s	70 ^s .6 ^s	9 ^s .34 ^s	58 ^s .8 ^s	53 ^s .81 ^s	60 ^s .7 ^s
30	49 ^s .79 ^s	70 ^s .9 ^s	9 ^s .16 ^s	61 ^s .5 ^s	53 ^s .80 ^s	63 ^s .1 ^s
July 10	49 ^s .78 ^s	71 ^s .2 ^s	8 ^s .92 ^s	64 ^s .0 ^s	53 ^s .69 ^s	65 ^s .3 ^s
	0 ^s .05	0 ^s .1	0 ^s .31	2 ^s .0	0 ^s .19	1 ^s .9
20	49 ^s .73 ^s	71 ^s .3 ^s	8 ^s .61 ^s	66 ^s .0 ^s	53 ^s .50 ^s	67 ^s .2 ^s
30	49 ^s .64 ^s	71 ^s .4 ^s	8 ^s .26 ^s	67 ^s .7 ^s	53 ^s .21 ^s	68 ^s .8 ^s
Aug. 9	49 ^s .53 ^s	71 ^s .4 ^s	7 ^s .87 ^s	68 ^s .8 ^s	52 ^s .84 ^s	70 ^s .0 ^s
19	49 ^s .39 ^s	71 ^s .2 ^s	7 ^s .44 ^s	69 ^s .5 ^s	52 ^s .42 ^s	70 ^s .8 ^s
	0 ^s .16	0 ^s .2	0 ^s .45	0 ^s .1	0 ^s .46	0 ^s .4
Sept. 29	49 ^s .23 ^s	71 ^s .0 ^s	6 ^s .99 ^s	69 ^s .6 ^s	51 ^s .96 ^s	71 ^s .2 ^s
8	49 ^s .06 ^s	70 ^s .7 ^s	6 ^s .53 ^s	69 ^s .2 ^s	51 ^s .47 ^s	71 ^s .0 ^s
18	48 ^s .89 ^s	70 ^s .2 ^s	6 ^s .08 ^s	68 ^s .3 ^s	50 ^s .99 ^s	70 ^s .4 ^s
28	48 ^s .73 ^s	69 ^s .7 ^s	5 ^s .65 ^s	66 ^s .9 ^s	50 ^s .53 ^s	69 ^s .3 ^s
	0 ^s .13	0 ^s .6	0 ^s .40	1 ^s .8	0 ^s .41	1 ^s .5
Oct. 8	48 ^s .60 ^s	69 ^s .1 ^s	5 ^s .25 ^s	65 ^s .1 ^s	50 ^s .12 ^s	67 ^s .8 ^s
18	48 ^s .50 ^s	68 ^s .5 ^s	4 ^s .89 ^s	62 ^s .7 ^s	49 ^s .78 ^s	65 ^s .9 ^s
28	48 ^s .44 ^s	68 ^s .0 ^s	4 ^s .60 ^s	60 ^s .0 ^s	49 ^s .53 ^s	63 ^s .7 ^s
Nov. 7	48 ^s .42 ^s	67 ^s .4 ^s	4 ^s .38 ^s	56 ^s .8 ^s	49 ^s .39 ^s	61 ^s .2 ^s
	0 ^s .04	0 ^s .4	0 ^s .13	3 ^s .4	0 ^s .02	2 ^s .5
17	48 ^s .46 ^s	67 ^s .0 ^s	4 ^s .25 ^s	53 ^s .4 ^s	49 ^s .37 ^s	58 ^s .7 ^s
27	48 ^s .55 ^s	66 ^s .8 ^s	4 ^s .20 ^s	49 ^s .8 ^s	49 ^s .48 ^s	56 ^s .1 ^s
Dec. 7	48 ^s .72 ^s	66 ^s .7 ^s	4 ^s .25 ^s	45 ^s .8 ^s	49 ^s .75 ^s	53 ^s .3 ^s
17	48 ^s .93 ^s	66 ^s .7 ^s	4 ^s .39 ^s	42 ^s .1 ^s	50 ^s .12 ^s	50 ^s .9 ^s
	0 ^s .25	0 ^s .3	0 ^s .23	3 ^s .6	0 ^s .48	2 ^s .0
27	49 ^s .18 ^s	67 ^s .0 ^s	4 ^s .62 ^s	38 ^s .5 ^s	50 ^s .60 ^s	48 ^s .9 ^s
37	49 ^s .46 ^s	67 ^s .4 ^s	4 ^s .93 ^s	35 ^s .1 ^s	51 ^s .18 ^s	47 ^s .1 ^s

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	ζ Herculis.		κ Ophiuchi.		ε Ursæ Minoris.							
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.						
	^h 16	^m 35	[°] 31	['] 51	^h 16	^m 50	[°] 9	['] 35	^h 17	^m 0	[°] 82	['] 15
Jan. 1	57.42	0.25	22.8	2.9	59.06	0.24	38.6	2.1	24.49	0.67	28.9	3.2
11	57.67	0.29	19.9	2.6	59.30	0.26	36.5	2.0	25.16	0.94	25.7	2.9
21	57.96	0.31	17.3	2.2	59.56	0.29	34.5	1.8	26.10	1.19	22.8	2.4
31	58.27	0.32	15.1	1.7	59.85	0.30	32.7	1.5	27.29	1.38	20.4	1.9
Feb. 10	58.59	0.33	13.4	1.3	60.15	0.31	31.2	1.2	28.67	1.51	18.5	1.3
20	58.92	0.34	12.1	0.8	60.46	0.30	30.0	0.8	30.18	1.60	17.2	0.7
Mar. 2	59.26	0.32	11.3	0.2	60.76	0.30	29.2	0.4	31.78	1.61	16.5	0.0
12	59.58	0.31	11.1	0.4	61.06	0.30	28.8	0.1	33.39	1.57	16.5	0.6
22	59.89	0.29	11.5	1.0	61.36	0.27	28.7	0.4	34.96	1.47	17.1	1.3
Apr. 1	60.18	0.27	12.5	1.4	61.63	0.26	29.1	0.7	36.43	1.32	18.4	1.8
11	60.45	0.24	13.9	1.8	61.89	0.25	29.8	1.0	37.75	1.12	20.2	2.3
21	60.69	0.21	15.7	2.2	62.14	0.22	30.8	1.3	38.87	0.89	22.5	2.7
May 1	60.90	0.18	17.9	2.5	62.36	0.19	32.1	1.5	39.76	0.63	25.2	3.0
11	61.08	0.14	20.4	2.5	62.55	0.16	33.6	1.7	40.39	0.35	28.2	3.1
21	61.22	0.10	22.9	2.6	62.71	0.14	35.3	1.7	40.74	0.08	31.3	3.3
31	61.32	0.06	25.5	2.7	62.85	0.10	37.0	1.7	40.82	0.21	34.6	3.2
June 10	61.38	0.03	28.2	2.5	62.95	0.07	38.7	1.7	40.61	0.49	37.8	3.1
20	61.41	0.02	30.7	2.4	63.02	0.03	40.4	1.6	40.12	0.75	40.9	3.0
30	61.39	0.06	33.1	2.2	63.05	0.01	42.0	1.5	39.37	0.99	43.9	2.6
July 10	61.33	0.09	35.3	1.9	63.04	0.04	43.5	1.3	38.38	1.21	46.5	2.4
20	61.24	0.13	37.2	1.6	63.00	0.07	44.8	1.2	37.17	1.40	48.9	1.9
30	61.11	0.16	38.8	1.3	62.93	0.11	46.0	0.9	35.77	1.57	50.8	1.5
Aug. 9	60.95	0.19	40.1	0.8	62.82	0.13	46.9	0.8	34.20	1.69	52.3	1.0
19	60.76	0.20	40.9	0.5	62.69	0.15	47.7	0.5	32.51	1.78	53.3	0.6
29	60.56	0.22	41.4	0.1	62.54	0.17	48.2	0.2	30.73	1.83	53.9	0.0
Sept. 8	60.34	0.22	41.5	0.3	62.37	0.17	48.4	0.0	28.90	1.83	53.9	0.4
18	60.12	0.20	41.2	0.8	62.20	0.16	48.4	0.2	27.07	1.82	53.5	1.0
28	59.92	0.19	40.4	1.2	62.04	0.15	48.2	0.5	25.25	1.74	52.5	1.4
Oct. 8	59.73	0.17	39.2	1.5	61.89	0.13	47.7	0.8	23.51	1.61	51.1	1.9
18	59.56	0.12	37.7	2.0	61.76	0.10	46.9	1.0	21.90	1.46	49.2	2.3
28	59.44	0.09	35.7	2.2	61.66	0.06	45.9	1.3	20.44	1.26	46.9	2.8
Nov. 7	59.35	0.03	33.5	2.6	61.60	0.01	44.6	1.6	19.18	1.01	44.1	3.0
17	59.32	0.02	30.9	2.8	61.59	0.04	43.0	1.7	18.17	0.75	41.1	3.3
27	59.34	0.09	28.1	3.3	61.63	0.09	41.3	2.1	17.42	0.46	37.8	3.5
Dec. 7	59.43	0.13	24.8	3.1	61.72	0.14	39.2	2.1	16.96	0.14	34.3	3.9
17	59.56	0.19	21.7	3.1	61.86	0.18	37.1	2.1	16.82	0.20	30.4	3.5
27	59.75	0.23	18.6	2.9	62.04	0.22	35.0	2.1	17.02	0.51	26.9	3.2
37	59.98	0.23	15.7	2.9	62.26	0.22	32.9	2.1	17.53	0.51	23.7	3.2

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Herculis.		θ Ophiuchi.		β Draconis.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. North.
	^h 17 ^m 8	[°] 14 ['] 32	^h 17 ^m 13	[°] 24 ['] 51	^h 17 ^m 27	[°] 52 ['] 23
Jan. 1	12 ^s 30 ^s 0 ^s 22	63 ^s 0 ^s 2 ^s 3	20 ^s 32 ^s 0 ^s 26	21 ^s 6 ^s 0 ^s 3	13 ^s 06 ^s 0 ^s 21	71 ^s 7 ^s 3 ^s 4
11	12 ^s 52 ^s 0 ^s 25	60 ^s 7 ^s 2 ^s 2	20 ^s 58 ^s 0 ^s 29	21 ^s 9 ^s 0 ^s 3	13 ^s 27 ^s 0 ^s 27	68 ^s 3 ^s 3 ^s 1
21	12 ^s 77 ^s 0 ^s 28	58 ^s 5 ^s 1 ^s 9	20 ^s 87 ^s 0 ^s 31	22 ^s 2 ^s 0 ^s 4	13 ^s 54 ^s 0 ^s 33	65 ^s 2 ^s 2 ^s 8
31	13 ^s 05 ^s 0 ^s 29	56 ^s 6 ^s 1 ^s 6	21 ^s 18 ^s 0 ^s 33	22 ^s 6 ^s 0 ^s 5	13 ^s 87 ^s 0 ^s 36	62 ^s 4 ^s 2 ^s 3
Feb. 10	13 ^s 34 ^s 0 ^s 30	55 ^s 0 ^s 1 ^s 3	21 ^s 51 ^s 0 ^s 34	23 ^s 1 ^s 0 ^s 4	14 ^s 23 ^s 0 ^s 39	60 ^s 1 ^s 1 ^s 7
20	13 ^s 64 ^s 0 ^s 31	53 ^s 7 ^s 0 ^s 9	21 ^s 85 ^s 0 ^s 34	23 ^s 5 ^s 0 ^s 5	14 ^s 62 ^s 0 ^s 41	58 ^s 4 ^s 1 ^s 1
Mar. 2	13 ^s 95 ^s 0 ^s 30	52 ^s 8 ^s 0 ^s 4	22 ^s 19 ^s 0 ^s 35	24 ^s 0 ^s 0 ^s 4	15 ^s 03 ^s 0 ^s 42	57 ^s 3 ^s 0 ^s 5
12	14 ^s 25 ^s 0 ^s 30	52 ^s 4 ^s 0 ^s 1	22 ^s 54 ^s 0 ^s 33	24 ^s 4 ^s 0 ^s 3	15 ^s 45 ^s 0 ^s 41	56 ^s 8 ^s 0 ^s 2
22	14 ^s 55 ^s 0 ^s 28	52 ^s 5 ^s 0 ^s 4	22 ^s 87 ^s 0 ^s 33	24 ^s 7 ^s 0 ^s 3	15 ^s 86 ^s 0 ^s 40	57 ^s 0 ^s 0 ^s 8
Apr. 1	14 ^s 83 ^s 0 ^s 28	52 ^s 9 ^s 0 ^s 8	23 ^s 20 ^s 0 ^s 31	25 ^s 0 ^s 0 ^s 3	16 ^s 26 ^s 0 ^s 37	57 ^s 8 ^s 1 ^s 4
11	15 ^s 11 ^s 0 ^s 25	53 ^s 7 ^s 1 ^s 2	23 ^s 51 ^s 0 ^s 29	25 ^s 3 ^s 0 ^s 2	16 ^s 63 ^s 0 ^s 35	59 ^s 2 ^s 2 ^s 0
21	15 ^s 36 ^s 0 ^s 23	54 ^s 9 ^s 1 ^s 5	23 ^s 80 ^s 0 ^s 27	25 ^s 5 ^s 0 ^s 2	16 ^s 98 ^s 0 ^s 30	61 ^s 2 ^s 2 ^s 4
May 1	15 ^s 59 ^s 0 ^s 21	56 ^s 4 ^s 1 ^s 8	24 ^s 07 ^s 0 ^s 26	25 ^s 7 ^s 0 ^s 1	17 ^s 28 ^s 0 ^s 26	63 ^s 6 ^s 2 ^s 8
11	15 ^s 80 ^s 0 ^s 18	58 ^s 2 ^s 1 ^s 9	24 ^s 33 ^s 0 ^s 22	25 ^s 8 ^s 0 ^s 1	17 ^s 54 ^s 0 ^s 21	66 ^s 4 ^s 3 ^s 1
21	15 ^s 98 ^s 0 ^s 14	60 ^s 1 ^s 2 ^s 0	24 ^s 55 ^s 0 ^s 19	25 ^s 9 ^s 0 ^s 1	17 ^s 75 ^s 0 ^s 16	69 ^s 5 ^s 3 ^s 2
31	16 ^s 12 ^s 0 ^s 12	62 ^s 1 ^s 2 ^s 0	24 ^s 74 ^s 0 ^s 16	26 ^s 0 ^s 0 ^s 2	17 ^s 91 ^s 0 ^s 10	72 ^s 7 ^s 3 ^s 3
June 10	16 ^s 24 ^s 0 ^s 08	64 ^s 1 ^s 2 ^s 0	24 ^s 90 ^s 0 ^s 12	26 ^s 2 ^s 0 ^s 1	18 ^s 01 ^s 0 ^s 04	76 ^s 0 ^s 3 ^s 3
20	16 ^s 32 ^s 0 ^s 04	66 ^s 1 ^s 1 ^s 9	25 ^s 02 ^s 0 ^s 08	26 ^s 3 ^s 0 ^s 2	18 ^s 05 ^s 0 ^s 02	79 ^s 3 ^s 3 ^s 1
30	16 ^s 36 ^s 0 ^s 00	68 ^s 0 ^s 1 ^s 8	25 ^s 10 ^s 0 ^s 03	26 ^s 5 ^s 0 ^s 2	18 ^s 03 ^s 0 ^s 08	82 ^s 4 ^s 3 ^s 0
July 10	16 ^s 36 ^s 0 ^s 03	69 ^s 8 ^s 1 ^s 6	25 ^s 13 ^s 0 ^s 01	26 ^s 7 ^s 0 ^s 1	17 ^s 95 ^s 0 ^s 14	85 ^s 4 ^s 2 ^s 6
20	16 ^s 33 ^s 0 ^s 07	71 ^s 4 ^s 1 ^s 4	25 ^s 12 ^s 0 ^s 04	26 ^s 8 ^s 0 ^s 2	17 ^s 81 ^s 0 ^s 19	88 ^s 0 ^s 2 ^s 4
30	16 ^s 26 ^s 0 ^s 11	72 ^s 8 ^s 1 ^s 1	25 ^s 08 ^s 0 ^s 09	27 ^s 0 ^s 0 ^s 1	17 ^s 62 ^s 0 ^s 24	90 ^s 4 ^s 2 ^s 0
Aug. 9	16 ^s 15 ^s 0 ^s 13	73 ^s 9 ^s 0 ^s 9	24 ^s 99 ^s 0 ^s 12	27 ^s 1 ^s 0 ^s 0	17 ^s 38 ^s 0 ^s 28	92 ^s 4 ^s 1 ^s 5
19	16 ^s 02 ^s 0 ^s 16	74 ^s 8 ^s 0 ^s 7	24 ^s 87 ^s 0 ^s 15	27 ^s 1 ^s 0 ^s 0	17 ^s 10 ^s 0 ^s 31	93 ^s 9 ^s 1 ^s 1
29	15 ^s 86 ^s 0 ^s 17	75 ^s 5 ^s 0 ^s 3	24 ^s 72 ^s 0 ^s 16	27 ^s 1 ^s 0 ^s 1	16 ^s 79 ^s 0 ^s 34	95 ^s 0 ^s 0 ^s 6
Sept. 8	15 ^s 69 ^s 0 ^s 18	75 ^s 8 ^s 0 ^s 1	24 ^s 56 ^s 0 ^s 18	27 ^s 0 ^s 0 ^s 2	16 ^s 45 ^s 0 ^s 35	95 ^s 6 ^s 0 ^s 1
18	15 ^s 51 ^s 0 ^s 17	75 ^s 9 ^s 0 ^s 3	24 ^s 38 ^s 0 ^s 17	26 ^s 8 ^s 0 ^s 3	16 ^s 10 ^s 0 ^s 35	95 ^s 7 ^s 0 ^s 4
28	15 ^s 34 ^s 0 ^s 17	75 ^s 6 ^s 0 ^s 5	24 ^s 21 ^s 0 ^s 16	26 ^s 5 ^s 0 ^s 3	15 ^s 75 ^s 0 ^s 34	95 ^s 3 ^s 0 ^s 9
Oct. 8	15 ^s 17 ^s 0 ^s 15	75 ^s 1 ^s 0 ^s 9	24 ^s 05 ^s 0 ^s 14	26 ^s 2 ^s 0 ^s 4	15 ^s 41 ^s 0 ^s 31	94 ^s 4 ^s 1 ^s 4
18	15 ^s 02 ^s 0 ^s 11	74 ^s 2 ^s 1 ^s 1	23 ^s 91 ^s 0 ^s 10	25 ^s 8 ^s 0 ^s 4	15 ^s 10 ^s 0 ^s 28	93 ^s 0 ^s 1 ^s 9
28	14 ^s 91 ^s 0 ^s 07	73 ^s 1 ^s 1 ^s 4	23 ^s 81 ^s 0 ^s 06	25 ^s 4 ^s 0 ^s 4	14 ^s 82 ^s 0 ^s 23	91 ^s 1 ^s 2 ^s 4
Nov. 7	14 ^s 84 ^s 0 ^s 03	71 ^s 7 ^s 1 ^s 7	23 ^s 75 ^s 0 ^s 02	25 ^s 0 ^s 0 ^s 4	14 ^s 59 ^s 0 ^s 17	88 ^s 7 ^s 2 ^s 7
17	14 ^s 81 ^s 0 ^s 01	70 ^s 0 ^s 1 ^s 9	23 ^s 73 ^s 0 ^s 04	24 ^s 6 ^s 0 ^s 3	14 ^s 42 ^s 0 ^s 11	86 ^s 0 ^s 3 ^s 1
27	14 ^s 82 ^s 0 ^s 06	68 ^s 1 ^s 2 ^s 1	23 ^s 77 ^s 0 ^s 09	24 ^s 3 ^s 0 ^s 1	14 ^s 31 ^s 0 ^s 03	82 ^s 9 ^s 3 ^s 3
Dec. 7	14 ^s 88 ^s 0 ^s 13	66 ^s 0 ^s 2 ^s 6	23 ^s 86 ^s 0 ^s 16	24 ^s 2 ^s 0 ^s 1	14 ^s 28 ^s 0 ^s 04	79 ^s 6 ^s 3 ^s 8
17	15 ^s 01 ^s 0 ^s 16	63 ^s 4 ^s 2 ^s 3	24 ^s 02 ^s 0 ^s 20	24 ^s 1 ^s 0 ^s 0	14 ^s 32 ^s 0 ^s 11	75 ^s 8 ^s 3 ^s 5
27	15 ^s 17 ^s 0 ^s 20	61 ^s 1 ^s 2 ^s 3	24 ^s 22 ^s 0 ^s 24	24 ^s 1 ^s 0 ^s 2	14 ^s 43 ^s 0 ^s 17	72 ^s 3 ^s 3 ^s 5
37	15 ^s 37 ^s 0 ^s 20	58 ^s 8 ^s 2 ^s 3	24 ^s 46 ^s 0 ^s 24	24 ^s 3 ^s 0 ^s 2	14 ^s 60 ^s 0 ^s 27	68 ^s 8 ^s 3 ^s 5

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Ophiuchi.			μ Herculis.		
	R.A.	Dec. North.		R.A.	Dec. North.	
	^h 17	^o 12		^h 17	^o 27	
	^m 28	^s 22 53	^s 0.21	^m 40	^s 55 40	^s 0.19
Jan. 11	22 74	0.23	39 45.8	55 59	0.22	48 8.4
21	22 97	0.26	43.6	55 81	0.26	5.5
31	23 23	0.29	41.6	56 07	0.28	2.9
			39.7			48 0.5
Feb. 10	23 52	0.29		56 35	0.30	2.0
20	23 81	0.30	38.1	56 65	0.31	47 58.5
Mar. 2	24 11	0.30	36.8	56 96	0.32	56.9
12	24 41	0.31	36.0	57 28	0.31	55.8
			35.5			55.2
22	24 72	0.29		57 59	0.31	0.0
Apr. 1	25 01	0.28	35.5	57 90	0.30	55.2
11	25 29	0.26	35.8	58 20	0.28	55.7
21	25 55	0.25	36.6	58 48	0.26	56.7
			37.7			47 58.2
May 1	25 80	0.22		58 74	0.23	1.8
11	26 02	0.20	39.2	58 97	0.21	48 0.0
21	26 22	0.17	40.8	59 18	0.17	2.2
31	26 39	0.13	42.6	59 35	0.14	4.6
			44.6			7.2
June 10	26 52	0.10		59 49	0.09	2.6
20	26 62	0.06	46.6	59 58	0.06	9.8
30	26 68	0.03	48.6	59 64	0.01	12.5
July 10	26 71	0.02	50.5	59 65	0.04	15.1
			52.2			17.5
20	26 69	0.06		59 61	0.07	2.2
30	26 63	0.09	53.9	59 54	0.11	19.7
Aug. 9	26 54	0.12	55.3	59 43	0.15	21.7
19	26 42	0.15	56.5	59 28	0.18	23.4
			57.4			24.7
29	26 27	0.16		59 10	0.19	1.1
8	26 11	0.18	58.2	58 91	0.21	25.8
18	25 93	0.17	58.6	58 70	0.22	26.4
28	25 76	0.17	58.8	58 48	0.20	26.6
			58.6			26.5
Oct. 8	25 59	0.16		58 28	0.19	0.5
18	25 43	0.12	58.2	58 09	0.16	26.0
28	25 31	0.08	57.5	57 93	0.13	25.0
Nov. 7	25 23	0.05	56.5	57 80	0.09	23.7
			55.3			22.0
17	25 18	0.01		57 71	0.04	2.0
27	25 17	0.05	53.8	57 67	0.01	30.0
Dec. 7	25 22	0.10	52.0	57 68	0.07	17.6
17	25 32	0.15	50.1	{8.8}	0.11	25.0
			47.8			15.0
27	25 47	0.18		57 87	0.17	{11.8}
			45.6			2.2

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	σ Octantis.		γ Draconis.	
	R. A.	Dec. South.	R. A.	Dec. North.
	^h 17	^o 89	^h 17	^o 51
Jan. 1	^m 44 ^s 50.25 ["] 10.56	16 ['] 42.0 ["] 2.9	^m 53 ^s 18.09 ["] 0.18	30 ['] 12.7 ["] 3.4
11	45 0.81 13.36	39.1 2.7	18.27 0.23	9.3 3.2
21	14.17 15.78	36.4 2.4	18.50 0.28	6.1 2.9
31	29.95 17.76	34.0 1.9	18.78 0.33	3.2 2.5
Feb. 10	45 47.71 19.27	32.1 1.4	19.11 0.37	30 0.7 1.9
20	46 6.98 20.33	30.7 0.9	19.48 0.39	29 58.8 1.4
Mar. 2	27.31 20.90	29.8 0.5	19.87 0.40	57.4 0.7
12	46 48.21 20.99	29.3 0.1	20.27 0.41	56.7 0.1
Apr. 22	47 9.20 20.66	29.4 0.5	20.68 0.40	56.6 0.5
1	29.86 19.92	29.9 1.0	21.08 0.39	57.1 1.2
11	47 49.78 18.69	30.9 1.4	21.47 0.36	29 58.3 1.8
21	48 8.47 17.16	32.3 1.8	21.83 0.33	30 0.1 2.2
May 1	25.63 15.29	34.1 2.2	22.16 0.29	2.3 2.6
11	40.92 13.08	36.3 2.5	22.45 0.24	4.9 3.0
21	48 54.00 10.62	38.8 2.8	22.69 0.19	7.9 3.2
31	49 4.62 7.90	41.6 2.9	22.88 0.14	11.1 3.3
June 10	12.52 5.07	44.5 3.0	23.02 0.08	14.4 3.4
20	17.59 2.05	47.5 3.1	23.10 0.02	17.8 3.2
30	19.64 0.94	50.6 3.1	23.12 0.04	21.0 3.1
July 10	18.70 3.90	53.7 2.9	23.08 0.10	24.1 2.9
20	14.80 6.74	56.6 2.6	22.98 0.16	27.0 2.6
30	49 8.06 9.35	16 59.2 2.4	22.82 0.21	29.6 2.3
Aug. 9	48 58.71 11.65	17 1.6 1.9	22.61 0.25	31.9 1.8
19	47.06 13.54	3.5 1.5	22.36 0.29	33.7 1.4
Sept. 29	33.52 14.96	5.0 0.9	22.07 0.32	35.1 1.0
8	18.56 15.81	5.9 0.4	21.75 0.34	36.1 0.5
18	48 2.75 16.05	6.3 0.3	21.41 0.34	36.6 0.1
28	47 46.70 15.65	6.0 0.8	21.07 0.34	36.5 0.5
Oct. 8	31.05 14.62	5.2 1.4	20.73 0.32	36.0 1.1
18	16.43 12.96	3.8 1.9	20.41 0.29	34.9 1.6
28	47 3.47 10.75	17 1.9 2.5	20.12 0.25	33.3 2.0
Nov. 7	46 52.72 8.05	16 59.4 2.8	19.87 0.19	31.3 2.5
17	44.67 5.00	56.6 3.1	19.68 0.14	28.8 1.9
27	39.67 1.65	53.5 3.3	19.54 0.08	25.9 1.1
Dec. 7	38.02 1.77	50.2 3.3	19.46 0.00	22.8 1.3
17	39.79 5.90	46.9 3.7	19.46 0.08	19.5 1.8
27	45.69 8.20	43.2 2.2	19.54 0.14	15.7 1.4

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	μ^1 Sagittarii.		α Lyrae. (Vega)		β Lyrae.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 18 ^m 5	[°] 21 ['] 5	^h 18 ^m 32	[°] 38 ['] 38	^h 18 ^m 44	[°] 33 ['] 11
Jan. 1	18 ^h 98 ^m 0 ^s	38 [°] 0 ['] 0 ["]	8 ^h 37 ^m 0 ^s	68 [°] 2 ['] 0 ["]	51 ^h 07 ^m 0 ^s	56 [°] 3 ['] 0 ["]
11	19 ^h 18 ^m 0 ^s	38 [°] 2 ['] 0 ["]	8 ^h 50 ^m 0 ^s	65 [°] 1 ['] 3 ["]	51 ^h 19 ^m 0 ^s	53 [°] 3 ['] 0 ["]
21	19 ^h 44 ^m 0 ^s	38 [°] 4 ['] 0 ["]	8 ^h 67 ^m 0 ^s	62 [°] 1 ['] 3 ["]	51 ^h 35 ^m 0 ^s	50 [°] 5 ['] 2 ["]
31	19 ^h 69 ^m 0 ^s	38 [°] 6 ['] 0 ["]	8 ^h 89 ^m 0 ^s	59 [°] 3 ['] 0 ["]	51 ^h 55 ^m 0 ^s	47 [°] 9 ['] 0 ["]
Feb. 10	19 ^h 98 ^m 0 ^s	38 [°] 8 ['] 0 ["]	9 ^h 14 ^m 0 ^s	56 [°] 9 ['] 0 ["]	51 ^h 78 ^m 0 ^s	45 [°] 6 ['] 0 ["]
20	20 ^h 29 ^m 0 ^s	39 [°] 0 ['] 0 ["]	9 ^h 43 ^m 0 ^s	54 [°] 9 ['] 0 ["]	52 ^h 05 ^m 0 ^s	43 [°] 7 ['] 0 ["]
Mar. 2	20 ^h 61 ^m 0 ^s	39 [°] 1 ['] 0 ["]	9 ^h 74 ^m 0 ^s	53 [°] 4 ['] 0 ["]	52 ^h 33 ^m 0 ^s	42 [°] 2 ['] 0 ["]
12	20 ^h 93 ^m 0 ^s	39 [°] 2 ['] 0 ["]	10 ^h 07 ^m 0 ^s	52 [°] 4 ['] 0 ["]	52 ^h 64 ^m 0 ^s	41 [°] 2 ['] 0 ["]
22	21 ^h 26 ^m 0 ^s	39 [°] 1 ['] 0 ["]	10 ^h 41 ^m 0 ^s	52 [°] 0 ['] 0 ["]	52 ^h 96 ^m 0 ^s	40 [°] 8 ['] 0 ["]
Apr. 1	21 ^h 59 ^m 0 ^s	39 [°] 0 ['] 0 ["]	10 ^h 75 ^m 0 ^s	52 [°] 2 ['] 0 ["]	53 ^h 29 ^m 0 ^s	40 [°] 9 ['] 0 ["]
11	21 ^h 91 ^m 0 ^s	38 [°] 7 ['] 0 ["]	11 ^h 09 ^m 0 ^s	53 [°] 0 ['] 0 ["]	53 ^h 62 ^m 0 ^s	41 [°] 6 ['] 0 ["]
21	22 ^h 22 ^m 0 ^s	38 [°] 3 ['] 0 ["]	11 ^h 42 ^m 0 ^s	54 [°] 4 ['] 0 ["]	53 ^h 94 ^m 0 ^s	42 [°] 9 ['] 0 ["]
May 1	22 ^h 52 ^m 0 ^s	38 [°] 1 ['] 0 ["]	11 ^h 74 ^m 0 ^s	56 [°] 3 ['] 0 ["]	54 ^h 25 ^m 0 ^s	44 [°] 6 ['] 0 ["]
11	22 ^h 80 ^m 0 ^s	37 [°] 7 ['] 0 ["]	12 ^h 03 ^m 0 ^s	58 [°] 6 ['] 0 ["]	54 ^h 54 ^m 0 ^s	46 [°] 7 ['] 0 ["]
21	23 ^h 06 ^m 0 ^s	37 [°] 4 ['] 0 ["]	12 ^h 29 ^m 0 ^s	61 [°] 2 ['] 0 ["]	54 ^h 80 ^m 0 ^s	49 [°] 2 ['] 0 ["]
31	23 ^h 30 ^m 0 ^s	37 [°] 0 ['] 0 ["]	12 ^h 52 ^m 0 ^s	64 [°] 1 ['] 0 ["]	55 ^h 04 ^m 0 ^s	51 [°] 9 ['] 0 ["]
June 10	23 ^h 50 ^m 0 ^s	36 [°] 7 ['] 0 ["]	12 ^h 71 ^m 0 ^s	67 [°] 2 ['] 0 ["]	55 ^h 24 ^m 0 ^s	54 [°] 8 ['] 0 ["]
20	23 ^h 66 ^m 0 ^s	36 [°] 4 ['] 0 ["]	12 ^h 85 ^m 0 ^s	70 [°] 3 ['] 0 ["]	55 ^h 40 ^m 0 ^s	57 [°] 8 ['] 0 ["]
30	23 ^h 79 ^m 0 ^s	36 [°] 3 ['] 0 ["]	12 ^h 95 ^m 0 ^s	73 [°] 4 ['] 0 ["]	55 ^h 51 ^m 0 ^s	60 [°] 8 ['] 0 ["]
July 10	23 ^h 87 ^m 0 ^s	36 [°] 2 ['] 0 ["]	12 ^h 99 ^m 0 ^s	76 [°] 4 ['] 0 ["]	55 ^h 58 ^m 0 ^s	63 [°] 7 ['] 0 ["]
20	23 ^h 91 ^m 0 ^s	36 [°] 1 ['] 0 ["]	12 ^h 99 ^m 0 ^s	79 [°] 3 ['] 0 ["]	55 ^h 60 ^m 0 ^s	66 [°] 5 ['] 0 ["]
30	23 ^h 90 ^m 0 ^s	36 [°] 1 ['] 0 ["]	12 ^h 93 ^m 0 ^s	82 [°] 0 ['] 0 ["]	55 ^h 57 ^m 0 ^s	69 [°] 1 ['] 0 ["]
Aug. 9	23 ^h 85 ^m 0 ^s	36 [°] 1 ['] 0 ["]	12 ^h 83 ^m 0 ^s	84 [°] 4 ['] 0 ["]	55 ^h 50 ^m 0 ^s	71 [°] 4 ['] 0 ["]
19	23 ^h 77 ^m 0 ^s	36 [°] 2 ['] 0 ["]	12 ^h 68 ^m 0 ^s	86 [°] 5 ['] 0 ["]	55 ^h 38 ^m 0 ^s	73 [°] 4 ['] 0 ["]
29	23 ^h 65 ^m 0 ^s	36 [°] 2 ['] 0 ["]	12 ^h 49 ^m 0 ^s	88 [°] 2 ['] 0 ["]	55 ^h 22 ^m 0 ^s	75 [°] 1 ['] 0 ["]
Sept. 8	23 ^h 50 ^m 0 ^s	36 [°] 3 ['] 0 ["]	12 ^h 28 ^m 0 ^s	89 [°] 5 ['] 0 ["]	55 ^h 03 ^m 0 ^s	76 [°] 4 ['] 0 ["]
18	23 ^h 33 ^m 0 ^s	36 [°] 3 ['] 0 ["]	12 ^h 04 ^m 0 ^s	90 [°] 3 ['] 0 ["]	54 ^h 82 ^m 0 ^s	77 [°] 3 ['] 0 ["]
28	23 ^h 16 ^m 0 ^s	36 [°] 2 ['] 0 ["]	11 ^h 79 ^m 0 ^s	90 [°] 7 ['] 0 ["]	54 ^h 60 ^m 0 ^s	77 [°] 8 ['] 0 ["]
Oct. 8	22 ^h 09 ^m 0 ^s	36 [°] 1 ['] 0 ["]	11 ^h 54 ^m 0 ^s	90 [°] 7 ['] 0 ["]	54 ^h 37 ^m 0 ^s	77 [°] 9 ['] 0 ["]
18	22 ^h 83 ^m 0 ^s	36 [°] 0 ['] 0 ["]	11 ^h 29 ^m 0 ^s	90 [°] 2 ['] 0 ["]	54 ^h 14 ^m 0 ^s	77 [°] 5 ['] 0 ["]
28	22 ^h 70 ^m 0 ^s	35 [°] 9 ['] 0 ["]	11 ^h 06 ^m 0 ^s	89 [°] 2 ['] 0 ["]	53 ^h 94 ^m 0 ^s	76 [°] 7 ['] 0 ["]
Nov. 7	22 ^h 60 ^m 0 ^s	35 [°] 8 ['] 0 ["]	10 ^h 86 ^m 0 ^s	87 [°] 8 ['] 0 ["]	53 ^h 75 ^m 0 ^s	75 [°] 5 ['] 0 ["]
17	22 ^h 54 ^m 0 ^s	35 [°] 6 ['] 0 ["]	10 ^h 70 ^m 0 ^s	85 [°] 9 ['] 0 ["]	53 ^h 60 ^m 0 ^s	73 [°] 8 ['] 0 ["]
27	22 ^h 53 ^m 0 ^s	35 [°] 5 ['] 0 ["]	10 ^h 59 ^m 0 ^s	83 [°] 7 ['] 0 ["]	53 ^h 49 ^m 0 ^s	71 [°] 8 ['] 0 ["]
Dec. 7	22 ^h 57 ^m 0 ^s	35 [°] 5 ['] 0 ["]	10 ^h 52 ^m 0 ^s	81 [°] 1 ['] 0 ["]	53 ^h 43 ^m 0 ^s	69 [°] 5 ['] 0 ["]
17	22 ^h 65 ^m 0 ^s	35 [°] 5 ['] 0 ["]	10 ^h 51 ^m 0 ^s	78 [°] 2 ['] 0 ["]	53 ^h 42 ^m 0 ^s	66 [°] 9 ['] 0 ["]
27	22 ^h 80 ^m 0 ^s	35 [°] 6 ['] 0 ["]	10 ^h 55 ^m 0 ^s	75 [°] 2 ['] 0 ["]	53 ^h 45 ^m 0 ^s	64 [°] 1 ['] 0 ["]
37	22 ^h 98 ^m 0 ^s	35 [°] 7 ['] 0 ["]	10 ^h 65 ^m 0 ^s	71 [°] 9 ['] 0 ["]	53 ^h 55 ^m 0 ^s	60 [°] 9 ['] 0 ["]

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	ζ Aquilæ.		ω Aquilæ.		δ Aquilæ.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 18 ^m 58	[°] 13 ['] 39	^h 19 ^m 11	[°] 11 ['] 20	^h 19 ^m 18	[°] 2 ['] 49
Jan. 1	54.68 ^s	17.4 ^s	10.91 ^s	31.2 ^s	22.41 ^s	65.3 ^s
11	54.80 ^{0.12}	15.2 ^{2.2}	11.02 ^{0.11}	29.1 ^{2.1}	22.52 ^{0.11}	63.8 ^{1.5}
21	54.95 ^{0.15}	13.3 ^{1.9}	11.17 ^{0.15}	27.3 ^{1.8}	22.67 ^{0.15}	62.5 ^{1.3}
31	55.14 ^{0.19}	11.5 ^{1.8}	11.34 ^{0.17}	25.6 ^{1.7}	22.85 ^{0.18}	61.3 ^{1.2}
Feb. 10	55.36 ^{0.22}	9.8 ^{1.7}	11.55 ^{0.21}	24.2 ^{1.4}	23.05 ^{0.20}	60.2 ^{1.1}
20	55.60 ^{0.24}	8.5 ^{1.3}	11.78 ^{0.23}	22.9 ^{1.3}	23.28 ^{0.23}	59.3 ^{0.9}
Mar. 2	55.86 ^{0.26}	7.5 ^{1.0}	12.03 ^{0.25}	22.0 ^{0.9}	23.53 ^{0.25}	58.8 ^{0.5}
12	56.14 ^{0.28}	6.9 ^{0.6}	12.31 ^{0.28}	21.4 ^{0.6}	23.80 ^{0.27}	58.5 ^{0.3}
22	56.43 ^{0.29}	6.7 ^{0.2}	12.59 ^{0.28}	21.3 ^{0.1}	24.08 ^{0.28}	58.5 ^{0.0}
Apr. 1	56.73 ^{0.30}	7.0 ^{0.3}	12.89 ^{0.30}	21.5 ^{0.2}	24.37 ^{0.29}	58.9 ^{0.4}
11	57.03 ^{0.30}	7.6 ^{0.6}	13.19 ^{0.30}	22.2 ^{0.7}	24.67 ^{0.30}	59.6 ^{0.7}
21	57.33 ^{0.30}	8.7 ^{1.1}	13.49 ^{0.30}	23.2 ^{1.0}	24.98 ^{0.31}	60.5 ^{0.9}
May 1	57.62 ^{0.29}	10.1 ^{1.4}	13.78 ^{0.29}	24.6 ^{1.4}	25.28 ^{0.30}	61.8 ^{1.3}
11	57.96 ^{0.28}	11.8 ^{1.7}	14.07 ^{0.29}	26.2 ^{1.6}	25.57 ^{0.29}	63.3 ^{1.5}
21	58.17 ^{0.27}	13.7 ^{1.9}	14.34 ^{0.27}	28.1 ^{1.9}	25.85 ^{0.28}	64.9 ^{1.6}
31	58.41 ^{0.24}	15.9 ^{2.2}	14.59 ^{0.25}	30.2 ^{2.1}	26.11 ^{0.26}	66.7 ^{1.8}
June 10	58.63 ^{0.22}	18.1 ^{2.2}	14.82 ^{0.23}	32.3 ^{2.1}	26.34 ^{0.23}	68.5 ^{1.8}
20	58.81 ^{0.18}	20.4 ^{2.3}	15.01 ^{0.19}	34.5 ^{2.2}	26.55 ^{0.21}	70.3 ^{1.8}
30	58.95 ^{0.14}	22.6 ^{2.2}	15.17 ^{0.16}	36.7 ^{2.2}	26.72 ^{0.17}	72.1 ^{1.8}
July 10	59.05 ^{0.10}	24.8 ^{2.2}	15.29 ^{0.12}	38.8 ^{2.1}	26.85 ^{0.13}	73.8 ^{1.7}
20	59.11 ^{0.06}	26.8 ^{2.0}	15.36 ^{0.07}	40.8 ^{2.0}	26.94 ^{0.09}	75.3 ^{1.5}
30	59.13 ^{0.02}	28.7 ^{1.9}	15.39 ^{0.03}	42.6 ^{1.8}	26.98 ^{0.04}	76.8 ^{1.5}
Aug. 9	59.10 ^{0.03}	30.4 ^{1.7}	15.38 ^{0.01}	44.2 ^{1.6}	26.98 ^{0.00}	78.0 ^{1.2}
19	59.04 ^{0.06}	31.8 ^{1.4}	15.32 ^{0.06}	45.6 ^{1.4}	26.94 ^{0.04}	79.0 ^{1.0}
29	58.93 ^{0.11}	33.0 ^{1.2}	15.23 ^{0.09}	46.8 ^{1.2}	26.87 ^{0.07}	79.9 ^{0.9}
Sept. 8	58.80 ^{0.13}	34.0 ^{1.0}	15.11 ^{0.12}	47.7 ^{0.9}	26.76 ^{0.11}	80.5 ^{0.6}
18	58.64 ^{0.16}	34.6 ^{0.6}	15.15 ^{0.15}	48.4 ^{0.7}	26.62 ^{0.14}	81.0 ^{0.5}
28	58.47 ^{0.17}	35.0 ^{0.4}	14.96 ^{0.17}	48.8 ^{0.4}	26.46 ^{0.16}	81.3 ^{0.3}
Oct. 8	58.29 ^{0.18}	35.0 ^{0.0}	14.62 ^{0.17}	48.9 ^{0.1}	26.30 ^{0.16}	81.3 ^{0.0}
18	58.11 ^{0.18}	34.8 ^{0.2}	14.44 ^{0.18}	48.7 ^{0.2}	26.13 ^{0.17}	81.2 ^{0.1}
28	57.95 ^{0.16}	34.3 ^{0.5}	14.28 ^{0.16}	48.3 ^{0.4}	25.98 ^{0.15}	80.8 ^{0.4}
Nov. 7	57.81 ^{0.14}	33.5 ^{0.8}	14.14 ^{0.14}	47.6 ^{0.7}	25.85 ^{0.13}	80.3 ^{0.5}
17	57.70 ^{0.11}	32.4 ^{1.1}	14.03 ^{0.11}	46.6 ^{1.0}	25.74 ^{0.11}	79.6 ^{0.7}
27	57.62 ^{0.08}	31.0 ^{1.4}	13.95 ^{0.08}	45.4 ^{1.2}	25.66 ^{0.08}	78.7 ^{0.9}
Dec. 7	57.59 ^{0.03}	29.4 ^{1.6}	13.91 ^{0.04}	43.9 ^{1.5}	25.63 ^{0.03}	77.6 ^{1.1}
17	57.59 ^{0.00}	27.6 ^{1.8}	13.91 ^{0.00}	42.3 ^{1.6}	25.63 ^{0.00}	76.4 ^{1.2}
27	57.64 ^{0.05}	25.7 ^{1.9}	13.95 ^{0.04}	40.6 ^{1.7}	25.67 ^{0.04}	75.1 ^{1.3}
37	57.74 ^{0.10}	23.6 ^{2.1}	13.95 ^{0.08}	38.8 ^{1.8}	25.79 ^{0.08}	73.8 ^{1.3}

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	<i>h^s Sagittarii.</i>		<i>γ Aquilæ.</i>		<i>α Aquilæ. (Altair)</i>	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 19 ^m 28	[°] 25 ['] 11	^h 19 ^m 39	[°] 10 ['] 16	^h 19 ^m 43	[°] 8 ['] 29
Jan. 1	6 ^s 48 ^s 0 ^s 13	35 ^s 1 ^s 0 ^s 4	32 ^s 40 ^s 0 ^s 07	15 ^s 1 ^s 1 ^s 7	53 ^s 28 ^s 0 ^s 07	49 ^s 9 ^s 1 ^s 5
11	6 ^s 61 ^s 0 ^s 16	34 ^s 7 ^s 0 ^s 5	32 ^s 47 ^s 0 ^s 12	13 ^s 4 ^s 1 ^s 8	53 ^s 35 ^s 0 ^s 11	48 ^s 4 ^s 1 ^s 7
21	6 ^s 77 ^s 0 ^s 20	34 ^s 2 ^s 0 ^s 4	32 ^s 59 ^s 0 ^s 16	11 ^s 6 ^s 1 ^s 5	53 ^s 46 ^s 0 ^s 16	46 ^s 7 ^s 1 ^s 4
31	6 ^s 97 ^s 0 ^s 23	33 ^s 8 ^s 0 ^s 5	32 ^s 75 ^s 0 ^s 18	10 ^s 1 ^s 1 ^s 5	53 ^s 62 ^s 0 ^s 18	45 ^s 3 ^s 1 ^s 3
Feb. 10	7 ^s 20 ^s 0 ^s 25	33 ^s 3 ^s 0 ^s 6	32 ^s 93 ^s 0 ^s 21	8 ^s 6 ^s 1 ^s 2	53 ^s 80 ^s 0 ^s 21	44 ^s 0 ^s 1 ^s 1
20	7 ^s 45 ^s 0 ^s 28	32 ^s 7 ^s 0 ^s 6	33 ^s 14 ^s 0 ^s 23	7 ^s 4 ^s 0 ^s 9	54 ^s 01 ^s 0 ^s 23	42 ^s 9 ^s 0 ^s 8
Mar. 2	7 ^s 73 ^s 0 ^s 30	32 ^s 1 ^s 0 ^s 7	33 ^s 37 ^s 0 ^s 26	6 ^s 5 ^s 0 ^s 5	54 ^s 24 ^s 0 ^s 25	42 ^s 1 ^s 0 ^s 5
12	8 ^s 03 ^s 0 ^s 31	31 ^s 4 ^s 0 ^s 7	33 ^s 63 ^s 0 ^s 27	6 ^s 0 ^s 0 ^s 1	54 ^s 49 ^s 0 ^s 27	41 ^s 6 ^s 0 ^s 1
22	8 ^s 34 ^s 0 ^s 33	30 ^s 7 ^s 0 ^s 8	33 ^s 90 ^s 0 ^s 29	5 ^s 9 ^s 0 ^s 2	54 ^s 76 ^s 0 ^s 29	41 ^s 5 ^s 0 ^s 3
Apr. 1	8 ^s 67 ^s 0 ^s 33	29 ^s 9 ^s 0 ^s 9	34 ^s 19 ^s 0 ^s 30	6 ^s 1 ^s 0 ^s 6	55 ^s 05 ^s 0 ^s 30	41 ^s 8 ^s 0 ^s 6
11	9 ^s 00 ^s 0 ^s 34	29 ^s 0 ^s 0 ^s 9	34 ^s 49 ^s 0 ^s 30	6 ^s 7 ^s 1 ^s 0	55 ^s 35 ^s 0 ^s 30	42 ^s 4 ^s 1 ^s 0
21	9 ^s 34 ^s 0 ^s 34	28 ^s 1 ^s 0 ^s 8	34 ^s 79 ^s 0 ^s 30	7 ^s 7 ^s 1 ^s 3	55 ^s 65 ^s 0 ^s 31	43 ^s 4 ^s 1 ^s 3
May 1	9 ^s 68 ^s 0 ^s 34	27 ^s 3 ^s 0 ^s 8	35 ^s 09 ^s 0 ^s 30	9 ^s 0 ^s 1 ^s 7	55 ^s 96 ^s 0 ^s 30	44 ^s 7 ^s 1 ^s 7
11	10 ^s 02 ^s 0 ^s 32	26 ^s 5 ^s 0 ^s 8	35 ^s 39 ^s 0 ^s 29	10 ^s 7 ^s 1 ^s 9	56 ^s 26 ^s 0 ^s 29	46 ^s 4 ^s 1 ^s 8
21	10 ^s 34 ^s 0 ^s 30	25 ^s 7 ^s 0 ^s 6	35 ^s 68 ^s 0 ^s 27	12 ^s 6 ^s 1 ^s 9	56 ^s 55 ^s 0 ^s 27	48 ^s 2 ^s 2 ^s 0
31	10 ^s 64 ^s 0 ^s 28	25 ^s 1 ^s 0 ^s 6	35 ^s 95 ^s 0 ^s 25	14 ^s 5 ^s 2 ^s 2	56 ^s 82 ^s 0 ^s 26	50 ^s 2 ^s 2 ^s 1
June 10	10 ^s 92 ^s 0 ^s 24	24 ^s 5 ^s 0 ^s 4	36 ^s 20 ^s 0 ^s 22	16 ^s 7 ^s 2 ^s 2	57 ^s 08 ^s 0 ^s 22	52 ^s 3 ^s 2 ^s 1
20	11 ^s 16 ^s 0 ^s 21	24 ^s 1 ^s 0 ^s 3	36 ^s 42 ^s 0 ^s 18	18 ^s 9 ^s 2 ^s 2	57 ^s 30 ^s 0 ^s 19	54 ^s 4 ^s 2 ^s 2
30	11 ^s 37 ^s 0 ^s 17	23 ^s 8 ^s 0 ^s 1	36 ^s 60 ^s 0 ^s 14	21 ^s 1 ^s 2 ^s 1	57 ^s 49 ^s 0 ^s 15	56 ^s 6 ^s 2 ^s 0
July 10	11 ^s 54 ^s 0 ^s 12	23 ^s 7 ^s 0 ^s 0	36 ^s 74 ^s 0 ^s 11	23 ^s 2 ^s 2 ^s 0	57 ^s 64 ^s 0 ^s 10	58 ^s 6 ^s 2 ^s 0
20	11 ^s 66 ^s 0 ^s 07	23 ^s 7 ^s 0 ^s 2	36 ^s 85 ^s 0 ^s 05	25 ^s 2 ^s 1 ^s 9	57 ^s 74 ^s 0 ^s 07	60 ^s 6 ^s 1 ^s 8
30	11 ^s 73 ^s 0 ^s 02	23 ^s 9 ^s 0 ^s 2	36 ^s 90 ^s 0 ^s 01	27 ^s 1 ^s 1 ^s 7	57 ^s 81 ^s 0 ^s 02	62 ^s 4 ^s 1 ^s 6
Aug. 9	11 ^s 75 ^s 0 ^s 03	24 ^s 1 ^s 0 ^s 4	36 ^s 91 ^s 0 ^s 02	28 ^s 8 ^s 1 ^s 4	57 ^s 83 ^s 0 ^s 03	64 ^s 0 ^s 1 ^s 4
19	11 ^s 72 ^s 0 ^s 06	24 ^s 5 ^s 0 ^s 3	36 ^s 89 ^s 0 ^s 07	30 ^s 2 ^s 1 ^s 3	57 ^s 80 ^s 0 ^s 06	65 ^s 4 ^s 1 ^s 2
29	11 ^s 66 ^s 0 ^s 11	24 ^s 8 ^s 0 ^s 5	36 ^s 82 ^s 0 ^s 11	31 ^s 5 ^s 1 ^s 0	57 ^s 74 ^s 0 ^s 10	66 ^s 6 ^s 1 ^s 0
Sept. 8	11 ^s 55 ^s 0 ^s 14	25 ^s 3 ^s 0 ^s 3	36 ^s 71 ^s 0 ^s 13	32 ^s 5 ^s 0 ^s 7	57 ^s 64 ^s 0 ^s 13	67 ^s 6 ^s 0 ^s 7
18	11 ^s 41 ^s 0 ^s 16	25 ^s 6 ^s 0 ^s 4	36 ^s 58 ^s 0 ^s 16	33 ^s 2 ^s 0 ^s 5	57 ^s 51 ^s 0 ^s 15	68 ^s 3 ^s 0 ^s 4
28	11 ^s 25 ^s 0 ^s 17	26 ^s 0 ^s 0 ^s 3	36 ^s 42 ^s 0 ^s 16	33 ^s 7 ^s 0 ^s 2	57 ^s 36 ^s 0 ^s 16	68 ^s 7 ^s 0 ^s 3
Oct. 8	11 ^s 08 ^s 0 ^s 18	26 ^s 3 ^s 0 ^s 2	36 ^s 26 ^s 0 ^s 17	33 ^s 9 ^s 0 ^s 0	57 ^s 20 ^s 0 ^s 16	69 ^s 0 ^s 0 ^s 1
18	10 ^s 90 ^s 0 ^s 17	26 ^s 5 ^s 0 ^s 1	36 ^s 09 ^s 0 ^s 16	33 ^s 9 ^s 0 ^s 3	57 ^s 04 ^s 0 ^s 16	68 ^s 9 ^s 0 ^s 3
28	10 ^s 73 ^s 0 ^s 14	26 ^s 6 ^s 0 ^s 1	35 ^s 93 ^s 0 ^s 15	33 ^s 6 ^s 0 ^s 6	56 ^s 88 ^s 0 ^s 15	68 ^s 6 ^s 0 ^s 5
Nov. 7	10 ^s 59 ^s 0 ^s 12	26 ^s 5 ^s 0 ^s 1	35 ^s 78 ^s 0 ^s 12	33 ^s 0 ^s 0 ^s 8	56 ^s 73 ^s 0 ^s 12	68 ^s 1 ^s 0 ^s 7
17	10 ^s 47 ^s 0 ^s 08	26 ^s 4 ^s 0 ^s 1	35 ^s 66 ^s 0 ^s 10	32 ^s 2 ^s 1 ^s 0	56 ^s 61 ^s 0 ^s 09	67 ^s 4 ^s 1 ^s 0
27	10 ^s 39 ^s 0 ^s 04	26 ^s 3 ^s 0 ^s 3	35 ^s 56 ^s 0 ^s 06	31 ^s 2 ^s 1 ^s 3	56 ^s 52 ^s 0 ^s 06	66 ^s 4 ^s 1 ^s 2
Dec. 7	10 ^s 35 ^s 0 ^s 01	26 ^s 0 ^s 0 ^s 3	35 ^s 50 ^s 0 ^s 02	29 ^s 9 ^s 1 ^s 5	56 ^s 46 ^s 0 ^s 02	65 ^s 2 ^s 1 ^s 3
17	10 ^s 36 ^s 0 ^s 05	25 ^s 7 ^s 0 ^s 3	35 ^s 48 ^s 0 ^s 02	28 ^s 4 ^s 1 ^s 5	56 ^s 44 ^s 0 ^s 01	63 ^s 9 ^s 1 ^s 5
27	10 ^s 41 ^s 0 ^s 09	25 ^s 4 ^s 0 ^s 4	35 ^s 50 ^s 0 ^s 05	26 ^s 9 ^s 1 ^s 7	56 ^s 45 ^s 0 ^s 04	62 ^s 4 ^s 1 ^s 5
37	10 ^s 50 ^s 0 ^s 09	25 ^s 0 ^s 0 ^s 4	35 ^s 55 ^s 0 ^s 05	25 ^s 2 ^s 1 ^s 7	56 ^s 49 ^s 0 ^s 04	60 ^s 9 ^s 1 ^s 5

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	β Aquilæ.		λ Ursæ Minoris.	
	R. A.	Dec. North.	R. A.	Dec. North.
	^h 19	[°] 6	^h 20	[°] 88
Jan. 1	^m 48 ^s 22.30 ^s 0.07	['] 3 ["] 20.7 ["] 1.4	^m 3 ^s 22.48 ^s 5.06	['] 53 ["] 17.0 ["] 3.0
11	22.37 0.12	19.3 1.6	17.42 3.02	14.0 3.4
21	22.49 0.15	17.7 1.4	14.40 0.39	10.6 3.2
31	22.64 0.18	16.3 1.2	14.01 1.85	7.4 3.2
Feb. 10	22.82 0.20	15.1 1.0	15.86 3.08	4.2 2.9
20	23.02 0.22	14.1 0.6	19.84 5.92	53 1.3 2.6
Mar. 2	23.24 0.25	13.5 0.4	25.76 7.62	52 58.7 2.3
12	23.49 0.27	13.1 0.1	33.38 8.94	56.4 1.7
22	23.76 0.29	13.0 0.3	42.32 9.91	54.7 1.1
Apr. 1	24.05 0.29	13.3 0.7	3 52.23 10.47	53.6 0.6
11	24.34 0.31	14.0 1.0	4 2.70 10.64	53.0 0.1
21	24.65 0.30	15.0 1.3	13.34 10.38	53.1 0.6
May 1	24.95 0.30	16.3 1.5	23.72 9.78	53.7 1.2
11	25.25 0.29	17.8 1.8	33.50 8.84	54.9 1.8
21	25.54 0.28	19.6 1.9	42.34 7.60	56.7 2.3
31	25.82 0.26	21.5 2.0	49.94 6.14	52 59.0 2.6
June 10	26.08 0.22	23.5 2.0	4 56.08 4.50	53 1.6 3.0
20	26.30 0.19	25.5 2.0	5 0.58 2.76	4.6 3.2
30	26.49 0.16	27.5 1.9	3.34 0.93	7.8 3.4
July 10	26.65 0.12	29.4 1.8	4.27 0.92	11.2 3.5
20	26.77 0.06	31.2 1.7	3.35 2.78	14.7 3.4
30	26.83 0.03	32.9 1.5	5 0.59 4.52	18.1 3.4
Aug. 9	26.86 0.02	34.4 1.2	4 56.07 6.20	21.5 3.4
19	26.84 0.06	35.6 1.1	49.87 7.75	24.8 3.3
29	26.78 0.09	36.7 0.9	42.12 9.15	27.8 3.0
Sept. 8	26.69 0.13	37.6 0.6	32.97 10.36	27.8 2.8
18	26.56 0.14	38.2 0.4	22.61 11.38	30.6 2.4
28	26.42 0.16	38.6 0.1	4 11.23 12.16	33.0 2.1
Oct. 8	26.26 0.16	38.7 0.0	3 59.07 12.70	35.1 1.6
18	26.10 0.16	38.7 0.3	46.37 12.95	36.7 1.1
28	25.94 0.15	38.4 0.5	33.42 12.92	37.8 0.7
Nov. 7	25.79 0.12	37.9 0.7	20.50 12.56	38.5 0.1
17	25.67 0.09	37.2 1.0	3 7.94 11.88	38.6 0.5
27	25.58 0.06	36.2 1.1	2 56.06 10.86	38.1 1.0
Dec. 7	25.52 0.03	35.1 1.2	45.20 9.53	37.1 1.5
17	25.49 0.01	33.9 1.3	35.67 7.89	35.6 2.0
27	25.50 0.05	32.6 1.5	27.78 5.98	33.6 1.4
37	48 25.55	3 31.1	2 21.80	31.2 1.8
			53 28.4	

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Capricorni.			α Pavonis.			ρ Capricorni.		
	R. A.		Dec. South.	R. A.		Dec. South.	R. A.		Dec. South.
	^h 20	^m 10	[°] 12 ['] 58	^h 20	^m 14	[°] 57 ['] 10	^h 20	^m 20	[°] 18 ['] 16
Jan. 1	12 ^s 97 ^s	0 ^s 06 ^s	51 ^s 9 ^s	27 ^s 34 ^s	0 ^s 07 ^s	68 ^s 0 ^s	48 ^s 07 ^s	0 ^s 06 ^s	44 ^s 2 ^s
11	13 ^s 03 ^s	0 ^s 11 ^s	52 ^s 1 ^s	27 ^s 41 ^s	0 ^s 14 ^s	65 ^s 6 ^s	48 ^s 13 ^s	0 ^s 09 ^s	44 ^s 1 ^s
21	13 ^s 14 ^s	0 ^s 14 ^s	52 ^s 4 ^s	{ 27 ^s 48 ^s }	{ 0 ^s 21 ^s }	{ 65 ^s 12 ^s }	48 ^s 22 ^s	0 ^s 15 ^s	44 ^s 0 ^s
31	13 ^s 28 ^s		52 ^s 5 ^s	27 ^s 77 ^s		60 ^s 5 ^s	48 ^s 37 ^s		43 ^s 7 ^s
		0 ^s 17 ^s			0 ^s 27 ^s			0 ^s 16 ^s	
Feb. 10	13 ^s 45 ^s	0 ^s 20 ^s	52 ^s 5 ^s	28 ^s 04 ^s	0 ^s 32 ^s	58 ^s 0 ^s	48 ^s 53 ^s	0 ^s 19 ^s	43 ^s 4 ^s
20	13 ^s 65 ^s	0 ^s 22 ^s	52 ^s 4 ^s	28 ^s 36 ^s	0 ^s 37 ^s	55 ^s 6 ^s	48 ^s 72 ^s	0 ^s 22 ^s	42 ^s 9 ^s
Mar. 2	13 ^s 87 ^s	0 ^s 25 ^s	52 ^s 1 ^s	28 ^s 73 ^s	0 ^s 42 ^s	53 ^s 3 ^s	48 ^s 94 ^s	0 ^s 25 ^s	42 ^s 3 ^s
12	14 ^s 12 ^s		51 ^s 7 ^s	29 ^s 15 ^s	0 ^s 45 ^s	51 ^s 1 ^s	49 ^s 19 ^s		41 ^s 6 ^s
		0 ^s 27 ^s						0 ^s 27 ^s	
22	14 ^s 39 ^s	0 ^s 29 ^s	51 ^s 1 ^s	29 ^s 60 ^s	0 ^s 48 ^s	49 ^s 2 ^s	49 ^s 46 ^s	0 ^s 29 ^s	40 ^s 7 ^s
Apr. 1	14 ^s 68 ^s	0 ^s 30 ^s	50 ^s 2 ^s	30 ^s 08 ^s	0 ^s 51 ^s	47 ^s 4 ^s	49 ^s 75 ^s	0 ^s 30 ^s	39 ^s 7 ^s
11	14 ^s 98 ^s	0 ^s 31 ^s	49 ^s 2 ^s	30 ^s 59 ^s	0 ^s 52 ^s	45 ^s 9 ^s	50 ^s 05 ^s	0 ^s 32 ^s	38 ^s 6 ^s
21	15 ^s 29 ^s		48 ^s 1 ^s	31 ^s 11 ^s	0 ^s 53 ^s	44 ^s 7 ^s	50 ^s 37 ^s		37 ^s 3 ^s
		0 ^s 32 ^s			0 ^s 53 ^s			0 ^s 33 ^s	
May 1	15 ^s 61 ^s	0 ^s 32 ^s	46 ^s 8 ^s	31 ^s 64 ^s	0 ^s 53 ^s	43 ^s 8 ^s	50 ^s 70 ^s	0 ^s 33 ^s	36 ^s 0 ^s
11	15 ^s 93 ^s	0 ^s 31 ^s	45 ^s 5 ^s	32 ^s 17 ^s	0 ^s 53 ^s	43 ^s 2 ^s	51 ^s 03 ^s	0 ^s 32 ^s	34 ^s 7 ^s
21	16 ^s 24 ^s	0 ^s 31 ^s	44 ^s 1 ^s	32 ^s 69 ^s	0 ^s 50 ^s	43 ^s 0 ^s	51 ^s 35 ^s	0 ^s 32 ^s	33 ^s 4 ^s
31	16 ^s 55 ^s		42 ^s 7 ^s	33 ^s 19 ^s	0 ^s 46 ^s	43 ^s 1 ^s	51 ^s 67 ^s		32 ^s 1 ^s
		0 ^s 28 ^s			0 ^s 46 ^s			0 ^s 29 ^s	
June 10	16 ^s 83 ^s	0 ^s 26 ^s	41 ^s 4 ^s	33 ^s 65 ^s	0 ^s 43 ^s	43 ^s 5 ^s	51 ^s 96 ^s	0 ^s 28 ^s	31 ^s 0 ^s
20	17 ^s 09 ^s	0 ^s 23 ^s	40 ^s 1 ^s	34 ^s 08 ^s	0 ^s 37 ^s	44 ^s 3 ^s	52 ^s 24 ^s	0 ^s 24 ^s	29 ^s 9 ^s
30	17 ^s 32 ^s	0 ^s 19 ^s	39 ^s 0 ^s	34 ^s 45 ^s	0 ^s 30 ^s	45 ^s 4 ^s	52 ^s 48 ^s	0 ^s 21 ^s	29 ^s 0 ^s
July 10	17 ^s 51 ^s	0 ^s 14 ^s	38 ^s 0 ^s	34 ^s 75 ^s	0 ^s 24 ^s	46 ^s 8 ^s	52 ^s 69 ^s	0 ^s 16 ^s	28 ^s 3 ^s
		0 ^s 11 ^s			0 ^s 16 ^s			0 ^s 12 ^s	
20	17 ^s 65 ^s	0 ^s 06 ^s	37 ^s 2 ^s	34 ^s 99 ^s	0 ^s 08 ^s	48 ^s 4 ^s	52 ^s 85 ^s	0 ^s 07 ^s	27 ^s 7 ^s
30	17 ^s 76 ^s	0 ^s 01 ^s	36 ^s 5 ^s	35 ^s 15 ^s	0 ^s 01 ^s	50 ^s 2 ^s	52 ^s 97 ^s	0 ^s 02 ^s	27 ^s 4 ^s
Aug. 9	17 ^s 82 ^s	0 ^s 03 ^s	36 ^s 0 ^s	35 ^s 23 ^s	0 ^s 07 ^s	52 ^s 2 ^s	53 ^s 04 ^s	0 ^s 02 ^s	27 ^s 2 ^s
19	17 ^s 83 ^s		35 ^s 7 ^s	35 ^s 22 ^s	0 ^s 07 ^s	54 ^s 1 ^s	53 ^s 06 ^s		27 ^s 1 ^s
		0 ^s 03 ^s			0 ^s 07 ^s			0 ^s 02 ^s	
29	17 ^s 80 ^s	0 ^s 07 ^s	35 ^s 6 ^s	35 ^s 15 ^s	0 ^s 15 ^s	56 ^s 0 ^s	53 ^s 04 ^s	0 ^s 07 ^s	27 ^s 2 ^s
Sept. 8	17 ^s 73 ^s	0 ^s 11 ^s	35 ^s 5 ^s	35 ^s 00 ^s	0 ^s 21 ^s	57 ^s 8 ^s	52 ^s 97 ^s	0 ^s 10 ^s	27 ^s 4 ^s
18	17 ^s 62 ^s	0 ^s 13 ^s	35 ^s 6 ^s	34 ^s 79 ^s	0 ^s 26 ^s	59 ^s 4 ^s	52 ^s 87 ^s	0 ^s 13 ^s	27 ^s 7 ^s
28	17 ^s 49 ^s	0 ^s 15 ^s	35 ^s 7 ^s	34 ^s 53 ^s	0 ^s 29 ^s	60 ^s 7 ^s	52 ^s 74 ^s	0 ^s 15 ^s	28 ^s 1 ^s
		0 ^s 16 ^s			0 ^s 32 ^s			0 ^s 15 ^s	
Oct. 8	17 ^s 34 ^s	0 ^s 15 ^s	35 ^s 9 ^s	34 ^s 24 ^s	0 ^s 32 ^s	61 ^s 7 ^s	52 ^s 59 ^s	0 ^s 15 ^s	28 ^s 4 ^s
18	17 ^s 18 ^s	0 ^s 15 ^s	36 ^s 2 ^s	33 ^s 92 ^s	0 ^s 30 ^s	62 ^s 4 ^s	52 ^s 44 ^s	0 ^s 15 ^s	28 ^s 8 ^s
28	17 ^s 03 ^s	0 ^s 15 ^s	36 ^s 5 ^s	33 ^s 60 ^s	0 ^s 30 ^s	62 ^s 6 ^s	52 ^s 28 ^s	0 ^s 15 ^s	29 ^s 1 ^s
Nov. 7	16 ^s 88 ^s	0 ^s 12 ^s	36 ^s 8 ^s	33 ^s 30 ^s	0 ^s 27 ^s	62 ^s 4 ^s	52 ^s 13 ^s	0 ^s 13 ^s	29 ^s 4 ^s
		0 ^s 10 ^s			0 ^s 23 ^s			0 ^s 11 ^s	
17	16 ^s 76 ^s	0 ^s 06 ^s	37 ^s 1 ^s	33 ^s 03 ^s	0 ^s 18 ^s	61 ^s 7 ^s	51 ^s 89 ^s	0 ^s 07 ^s	29 ^s 7 ^s
27	16 ^s 66 ^s	0 ^s 03 ^s	37 ^s 4 ^s	32 ^s 80 ^s	0 ^s 11 ^s	60 ^s 7 ^s	51 ^s 82 ^s	0 ^s 04 ^s	29 ^s 9 ^s
Dec. 7	16 ^s 60 ^s	0 ^s 00 ^s	37 ^s 8 ^s	32 ^s 62 ^s	0 ^s 04 ^s	59 ^s 3 ^s	51 ^s 78 ^s	0 ^s 00 ^s	30 ^s 0 ^s
17	16 ^s 57 ^s		38 ^s 1 ^s	32 ^s 51 ^s		57 ^s 5 ^s			30 ^s 1 ^s
		0 ^s 00 ^s			0 ^s 04 ^s			0 ^s 00 ^s	
27	16 ^s 57 ^s	0 ^s 04 ^s	38 ^s 4 ^s	32 ^s 47 ^s	0 ^s 03 ^s	55 ^s 5 ^s	51 ^s 78 ^s	0 ^s 03 ^s	30 ^s 1 ^s
37	16 ^s 61 ^s		38 ^s 7 ^s	32 ^s 50 ^s		53 ^s 2 ^s	51 ^s 81 ^s		30 ^s 0 ^s

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Cygni.		32 Vulpeculæ.		61^1 Cygni.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 20	^m 36	^h 20	^m 48	^h 21	^m 0
	^s 44	^s 46	^s 27	^s 31	^s 38	^s 3
Jan. I	35.84	43.8	32.02	24.5	33.24	32.2
II	35.80	41.0	32.01	22.3	33.21	29.9
21	35.81	38.0	32.04	20.1	33.21	27.4
31	35.87	34.9	32.11	17.6	33.25	24.8
	0.12	2.8	0.10	2.2	0.11	2.7
Feb. 10	35.99	32.1	32.21	15.4	33.36	22.1
20	36.15	29.4	32.35	13.4	33.49	19.7
Mar. 2	36.36	27.1	32.53	11.7	33.67	17.7
12	36.61	25.2	32.75	10.4	33.90	16.0
	0.29	1.4	0.24	0.9	0.26	1.3
Apr. 22	36.90	23.8	32.99	9.5	34.16	14.7
I	37.23	22.9	33.26	9.1	34.46	14.0
II	37.58	22.7	33.56	9.1	34.78	13.7
21	37.95	23.0	33.87	9.7	35.13	14.0
	0.38	0.9	0.32	1.0	0.36	0.9
May I	38.33	23.9	34.19	10.7	35.49	14.9
II	38.71	25.3	34.52	12.2	35.85	16.3
21	39.08	27.2	34.85	14.1	36.22	18.2
31	39.43	29.6	35.17	16.3	36.57	20.5
	0.33	2.8	0.30	2.5	0.34	2.7
June 10	39.76	32.4	35.47	18.8	36.91	23.2
20	40.05	35.4	35.74	21.5	37.22	26.1
30	40.29	38.7	35.98	24.5	37.48	29.2
July 10	40.49	42.1	36.19	27.4	37.71	32.5
	0.14	3.4	0.16	2.9	0.19	3.4
20	40.63	45.5	36.35	30.3	37.90	35.9
30	40.72	48.9	36.46	33.1	38.03	39.2
Aug. 9	40.75	52.2	36.52	35.8	38.11	42.4
19	40.72	55.3	36.54	38.4	38.13	45.5
	0.08	2.9	0.03	2.3	0.02	2.9
29	40.64	58.2	36.51	40.7	38.11	48.4
Sept. 8	40.51	60.7	36.44	42.7	38.04	51.1
18	40.33	62.9	36.33	44.4	37.92	53.4
28	40.12	64.8	36.19	45.8	37.77	55.3
	0.23	1.4	0.16	1.1	0.17	1.6
Oct. 8	39.89	66.2	36.03	46.9	37.60	56.9
18	39.63	67.2	35.85	47.5	37.41	58.0
28	39.38	67.7	35.67	47.8	37.20	58.7
Nov. 7	39.12	67.7	35.49	47.7	36.99	58.9
	0.24	0.6	0.17	0.5	0.19	0.2
17	38.88	67.1	35.32	47.2	36.80	58.7
27	38.65	66.1	35.16	46.3	36.62	58.0
Dec. 7	38.46	64.6	35.04	45.0	36.46	56.9
17	38.30	62.6	34.94	43.4	36.33	55.3
	0.11	2.3	0.07	1.8	0.10	1.9
27	38.19	60.3	34.87	41.6	36.23	53.4
37	38.12	57.7	34.84	39.5	36.17	51.2

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	ζ Cygni.		α Cephei.		β Aquarii.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. South.
	^h 21 ^m 6	[°] 29 ['] 38	^h 21 ^m 15	[°] 61 ['] 59	^h 21 ^m 24	[°] 6 ['] 11
Jan. 1	55° 10' 0.04	63° 2' 2.2	9° 97' 0.20	28° 5' 2.7	7° 49' 0.00	26° 7' 0.6
11	55° 06' 0.01	61° 0' 2.2	9° 77' 0.13	25° 8' 3.0	7° 49' 0.03	27° 3' 0.4
21	55° 07' 0.04	58° 8' 2.3	9° 64' 0.06	22° 8' 3.1	7° 52' 0.05	27° 7' 0.4
31	55° 11' 0.09	56° 5' 2.5	9° 58' 0.03	19° 7' 3.5	7° 57' 0.10	28° 1' 0.3
Feb. 10	55° 20' 0.12	54° 0' 2.1	9° 61' 0.12	16° 2' 3.1	7° 67' 0.11	28° 4' 0.1
20	55° 32' 0.16	51° 9' 1.8	9° 73' 0.20	13° 1' 2.9	7° 78' 0.15	28° 5' 0.2
Mar. 2	55° 48' 0.20	50° 1' 1.5	9° 93' 0.28	10° 2' 2.5	7° 93' 0.18	28° 3' 0.3
12	55° 68' 0.23	48° 6' 1.0	10° 21' 0.35	7° 7' 2.1	8° 11' 0.21	28° 0' 0.6
22	55° 91' 0.26	47° 6' 0.6	10° 56' 0.41	5° 6' 1.6	8° 32' 0.23	27° 4' 0.9
Apr. 1	56° 17' 0.29	47° 0' 0.1	10° 97' 0.45	4° 0' 1.1	8° 55' 0.26	26° 5' 1.0
11	56° 46' 0.32	46° 9' 0.4	11° 42' 0.50	2° 9' 0.4	8° 81' 0.29	25° 5' 1.3
21	56° 78' 0.32	47° 3' 0.9	11° 92' 0.52	0° 2' 0.2	9° 10' 0.30	24° 2' 1.5
May 1	57° 10' 0.34	48° 2' 1.4	12° 44' 0.53	2° 7' 0.8	9° 40' 0.31	22° 7' 1.6
11	57° 44' 0.33	49° 6' 1.8	12° 97' 0.53	3° 5' 1.4	9° 71' 0.32	21° 1' 1.8
21	57° 77' 0.33	51° 4' 2.1	13° 50' 0.50	4° 9' 1.9	10° 03' 0.32	19° 3' 1.8
31	58° 10' 0.32	53° 5' 2.5	14° 00' 0.47	6° 8' 2.4	10° 35' 0.31	17° 5' 1.9
June 10	58° 42' 0.29	56° 0' 2.8	14° 47' 0.43	9° 2' 2.9	10° 66' 0.30	15° 6' 1.8
20	58° 71' 0.26	58° 8' 2.8	14° 90' 0.36	12° 1' 3.2	10° 06' 0.27	13° 8' 1.7
30	58° 97' 0.22	61° 6' 3.0	15° 26' 0.30	15° 3' 3.4	11° 23' 0.24	12° 1' 1.6
July 10	59° 19' 0.18	64° 6' 3.0	15° 56' 0.23	18° 7' 3.6	11° 47' 0.21	10° 5' 1.4
20	59° 37' 0.13	67° 6' 2.9	15° 79' 0.15	22° 3' 3.7	11° 68' 0.16	9° 1' 1.3
30	59° 50' 0.08	70° 5' 2.8	15° 94' 0.06	26° 0' 3.8	11° 84' 0.13	7° 8' 1.0
Aug. 9	59° 58' 0.04	73° 3' 2.7	16° 00' 0.01	29° 8' 3.6	11° 97' 0.07	6° 8' 0.9
19	59° 62' 0.01	76° 0' 2.5	15° 99' 0.09	33° 4' 3.5	12° 04' 0.04	5° 9' 0.6
29	59° 61' 0.06	78° 5' 2.2	15° 90' 0.17	36° 9' 3.3	12° 08' 0.01	5° 3' 0.4
Sept. 8	59° 55' 0.10	80° 7' 1.9	15° 73' 0.23	40° 2' 3.0	12° 07' 0.05	4° 9' 0.2
18	59° 45' 0.12	82° 6' 1.6	15° 50' 0.29	43° 2' 2.6	12° 02' 0.08	4° 7' 0.1
28	59° 33' 0.16	84° 2' 1.2	15° 21' 0.34	45° 8' 2.3	11° 94' 0.11	4° 6' 0.1
Oct. 8	59° 17' 0.17	85° 4' 0.9	14° 87' 0.38	48° 1' 1.8	11° 83' 0.13	4° 7' 0.2
18	59° 00' 0.18	86° 3' 0.5	14° 49' 0.41	49° 9' 1.3	11° 70' 0.13	4° 9' 0.3
28	58° 82' 0.19	86° 8' 0.0	14° 08' 0.41	51° 2' 0.7	11° 57' 0.14	5° 2' 0.4
Nov. 7	58° 63' 0.17	86° 8' 0.3	13° 67' 0.42	51° 9' 0.2	11° 43' 0.13	5° 6' 0.5
17	58° 46' 0.16	86° 5' 0.8	13° 25' 0.40	52° 1' 0.3	11° 30' 0.12	6° 1' 0.5
27	58° 30' 0.14	85° 7' 1.1	12° 85' 0.38	51° 8' 1.0	11° 18' 0.10	6° 6' 0.5
Dec. 7	58° 16' 0.12	84° 6' 1.5	12° 47' 0.34	50° 8' 1.5	11° 08' 0.08	7° 1' 0.6
17	58° 04' 0.08	83° 1' 1.8	12° 13' 0.29	49° 3' 2.0	11° 00' 0.05	7° 7' 0.6
27	57° 96' 0.06	81° 3' 2.0	11° 84' 0.24	47° 3' 2.4	10° 95' 0.02	8° 3' 0.5
37	57° 90' 0.06	79° 3' 2.0	11° 60' 0.24	44° 9' 2.4	10° 93' 0.02	8° 8' 0.5

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	β Cephei.		ϵ Pegasi.		16 Pegasi.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h 21 ^m 26	[°] 69 ['] 56	^h 21 ^m 37	[°] 9 ['] 13	^h 21 ^m 46	[°] 25 ['] 15
Jan. 1	45° 66' 0.35	41° 7' 2.5	15° 06' 0.02	48° 4' 1.2	38° 12' 0.06	50° 9' 1.8
11	45° 31' 0.25	39° 2' 2.9	15° 04' 0.00	47° 2' 1.3	38° 06' 0.03	49° 1' 1.9
21	45° 06' 0.15	36° 3' 3.1	15° 04' 0.03	45° 9' 1.2	38° 03' 0.01	47° 2' 2.0
31	44° 9' 0.03	33° 2' 3.5	15° 07' 0.06	44° 7' 1.1	38° 04' 0.04	45° 2' 2.0
Feb. 10	44° 88' 0.10	29° 7' 3.2	{15° 11' 0.10}	{43° 5' 1.0}	38° 08' 0.09	43° 2' 1.9
20	44° 98' 0.21	26° 5' 3.0	15° 24' 0.13	42° 5' 0.7	38° 17' 0.12	41° 3' 1.6
Mar. 2	45° 19' 0.32	23° 5' 2.7	15° 37' 0.16	41° 8' 0.5	38° 29' 0.15	39° 7' 1.4
12	45° 51' 0.42	20° 8' 2.4	15° 53' 0.20	41° 3' 0.2	38° 44' 0.19	38° 3' 1.0
22	45° 93' 0.51	18° 4' 1.9	15° 73' 0.22	41° 1' 0.2	38° 63' 0.23	37° 3' 0.5
Apr. 1	46° 44' 0.59	16° 5' 1.4	15° 95' 0.25	41° 3' 0.5	38° 86' 0.26	36° 8' 0.2
11	47° 03' 0.64	15° 1' 0.7	16° 20' 0.28	41° 8' 0.8	39° 12' 0.29	36° 6' 0.3
21	47° 67' 0.67	14° 4' 0.1	16° 48' 0.29	42° 6' 1.2	39° 41' 0.31	36° 9' 0.8
May 1	48° 34' 0.69	14° 3' 0.5	16° 77' 0.31	43° 8' 1.5	39° 72' 0.32	37° 7' 1.2
11	49° 03' 0.69	14° 8' 1.2	17° 08' 0.32	45° 3' 1.8	40° 04' 0.34	38° 9' 1.6
21	49° 72' 0.66	16° 0' 1.7	17° 40' 0.32	47° 1' 2.0	40° 38' 0.33	40° 5' 2.0
31	50° 38' 0.62	17° 7' 2.2	17° 72' 0.31	49° 1' 2.1	40° 71' 0.33	42° 5' 2.3
June 10	51° 00' 0.55	19° 9' 2.7	18° 03' 0.29	51° 2' 2.3	41° 04' 0.31	44° 8' 2.5
20	51° 55' 0.48	22° 6' 3.0	18° 32' 0.28	53° 5' 2.3	41° 35' 0.28	47° 3' 2.7
30	52° 03' 0.39	25° 6' 3.4	18° 60' 0.24	55° 8' 2.2	41° 63' 0.26	50° 0' 2.7
July 10	52° 42' 0.30	29° 0' 3.6	18° 84' 0.21	58° 0' 2.2	41° 89' 0.22	52° 7' 2.9
20	52° 72' 0.19	32° 6' 3.7	19° 05' 0.17	60° 2' 2.1	42° 11' 0.17	55° 6' 2.8
30	52° 91' 0.08	36° 3' 3.8	19° 22' 0.13	62° 3' 1.9	42° 28' 0.13	58° 4' 2.7
Aug. 9	52° 99' 0.02	40° 1' 3.7	19° 35' 0.08	64° 2' 1.8	42° 41' 0.08	61° 1' 2.5
19	52° 97' 0.12	43° 8' 3.7	19° 43' 0.04	66° 0' 1.5	42° 49' 0.04	63° 6' 2.4
29	52° 85' 0.22	47° 5' 3.4	19° 47' 0.01	67° 5' 1.3	42° 53' 0.00	66° 0' 2.2
Sept. 8	52° 63' 0.32	50° 9' 3.3	19° 46' 0.04	68° 8' 1.1	42° 53' 0.05	68° 2' 1.9
18	52° 31' 0.40	54° 2' 2.9	19° 42' 0.07	69° 9' 0.8	42° 48' 0.09	70° 1' 1.6
28	51° 91' 0.47	57° 1' 2.5	19° 35' 0.11	70° 7' 0.6	42° 39' 0.11	71° 7' 1.3
Oct. 8	51° 44' 0.52	59° 6' 2.2	19° 24' 0.12	71° 3' 0.3	42° 28' 0.13	73° 0' 1.0
18	50° 92' 0.57	61° 8' 1.6	19° 12' 0.13	71° 6' 0.1	42° 15' 0.15	74° 0' 0.6
28	50° 35' 0.59	63° 4' 1.0	18° 99' 0.14	71° 7' 0.1	42° 00' 0.16	74° 6' 0.3
Nov. 7	49° 76' 0.60	64° 4' 0.6	18° 85' 0.13	71° 6' 0.4	41° 84' 0.16	74° 9' 0.1
17	49° 16' 0.59	65° 0' 0.1	18° 72' 0.13	71° 2' 0.6	41° 68' 0.15	74° 8' 0.5
27	48° 57' 0.57	64° 9' 0.7	18° 59' 0.11	70° 6' 0.7	41° 53' 0.12	74° 3' 0.8
Dec. 7	48° 00' 0.52	64° 2' 1.3	18° 48' 0.09	69° 9' 1.0	41° 39' 0.12	73° 5' 1.1
17	47° 48' 0.47	62° 9' 1.8	18° 39' 0.07	68° 9' 1.0	41° 27' 0.09	72° 4' 1.4
27	47° 01' 0.39	61° 1' 2.3	18° 32' 0.04	67° 9' 1.2	41° 18' 0.07	71° 0' 1.7
37	46° 62' 0.39	58° 8' 2.3	18° 28' 0.04	66° 7' 1.2	41° 11' 0.07	69° 3' 1.7

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Aquarii.			α Gruis.			θ Aquarii.		
	R. A.	Dec. South.		R. A.	Dec. South.		R. A.	Dec. South.	
	^h 21	^m 58	[°] 0	^h 21	^m 59	[°] 47	^h 22	^m 9	[°] 8
Jan. 1	32° 02'	0° 04'	74° 9'	19° 58'	0° 08'	42° 3'	23° 19'	0° 04'	66° 0'
11	31° 98'	0° 01'	75° 6'	19° 50'	0° 03'	40° 8'	23° 15'	0° 02'	66° 4'
21	31° 97'	0° 02'	76° 3'	19° 47'	0° 01'	39° 0'	23° 13'	0° 01'	66° 7'
31	31° 99'	0° 05'	76° 9'	19° 48'	0° 06'	37° 0'	23° 14'	0° 04'	66° 9'
Feb. 10	32° 04'	0° 09'	77° 4'	19° 54'	0° 11'	34° 7'	23° 18'	0° 08'	66° 9'
20	32° 13'	0° 11'	77° 7'	19° 65'	0° 15'	32° 0'	23° 26'	0° 11'	66° 7'
Mar. 2	32° 24'	0° 14'	77° 9'	19° 80'	0° 20'	29° 5'	23° 37'	0° 13'	66° 4'
12	32° 38'	0° 18'	77° 8'	20° 00'	0° 25'	26° 8'	23° 50'	0° 17'	65° 8'
22	32° 56'	0° 20'	77° 4'	20° 25'	0° 28'	24° 2'	23° 67'	0° 20'	65° 0'
Apr. 1	32° 76'	0° 24'	76° 8'	20° 53'	0° 32'	21° 6'	23° 87'	0° 24'	64° 0'
11	33° 00'	0° 26'	75° 8'	20° 85'	0° 36'	19° 1'	24° 11'	0° 26'	62° 7'
21	33° 26'	0° 29'	74° 7'	21° 21'	0° 39'	16° 7'	24° 37'	0° 28'	61° 3'
May 1	33° 55'	0° 30'	73° 2'	21° 60'	0° 42'	14° 5'	24° 65'	0° 30'	59° 6'
11	33° 85'	0° 32'	71° 6'	22° 02'	0° 43'	12° 5'	24° 95'	0° 32'	57° 9'
21	34° 17'	0° 32'	69° 8'	22° 45'	0° 43'	10° 8'	25° 27'	0° 33'	56° 0'
31	34° 49'	0° 32'	67° 8'	22° 88'	0° 44'	9° 4'	25° 60'	0° 32'	54° 0'
June 10	34° 81'	0° 30'	65° 8'	23° 32'	0° 42'	8° 4'	25° 92'	0° 31'	52° 1'
20	35° 11'	0° 29'	63° 8'	23° 74'	0° 40'	7° 7'	26° 23'	0° 30'	50° 3'
30	35° 40'	0° 26'	61° 8'	24° 14'	0° 36'	7° 4'	26° 53'	0° 28'	48° 5'
July 10	35° 66'	0° 23'	59° 9'	24° 50'	0° 32'	7° 5'	26° 81'	0° 24'	46° 8'
20	35° 89'	0° 20'	58° 1'	24° 82'	0° 27'	8° 0'	27° 05'	0° 21'	45° 4'
30	36° 09'	0° 15'	56° 5'	25° 09'	0° 21'	8° 9'	27° 26'	0° 16'	44° 2'
Aug. 9	36° 24'	0° 10'	55° 1'	25° 30'	0° 14'	10° 1'	27° 42'	0° 12'	43° 1'
19	36° 34'	0° 07'	53° 9'	25° 44'	0° 08'	11° 5'	27° 54'	0° 08'	42° 3'
29	36° 41'	0° 02'	52° 9'	25° 52'	0° 02'	13° 2'	27° 62'	0° 03'	41° 8'
Sept. 8	36° 43'	0° 02'	52° 1'	25° 54'	0° 04'	15° 0'	27° 65'	0° 00'	41° 5'
18	36° 41'	0° 05'	51° 6'	25° 50'	0° 10'	16° 8'	27° 65'	0° 05'	41° 3'
28	36° 36'	0° 09'	51° 3'	25° 40'	0° 14'	18° 7'	27° 60'	0° 07'	41° 4'
Oct. 8	36° 27'	0° 10'	51° 1'	25° 26'	0° 18'	20° 4'	27° 53'	0° 10'	41° 6'
18	36° 17'	0° 12'	51° 2'	25° 08'	0° 21'	21° 9'	27° 43'	0° 12'	42° 0'
28	36° 05'	0° 13'	51° 4'	24° 87'	0° 23'	23° 2'	27° 31'	0° 12'	42° 4'
Nov. 7	35° 92'	0° 12'	51° 7'	24° 64'	0° 22'	24° 2'	27° 19'	0° 12'	42° 9'
17	35° 80'	0° 12'	52° 1'	24° 42'	0° 22'	24° 8'	27° 07'	0° 13'	43° 4'
27	35° 68'	0° 11'	52° 7'	24° 20'	0° 20'	25° 1'	26° 94'	0° 11'	44° 0'
Dec. 7	35° 57'	0° 10'	53° 3'	24° 00'	0° 17'	24° 9'	26° 83'	0° 09'	44° 6'
17	35° 47'	0° 07'	54° 0'	23° 83'	0° 14'	24° 3'	26° 74'	0° 08'	45° 1'
27	35° 40'	0° 05'	54° 7'	23° 69'	0° 11'	23° 3'	26° 66'	0° 05'	45° 6'
37	35° 35'	0° 05'	55° 4'	23° 58'	0° 11'	22° 0'	26° 61'	0° 05'	46° 0'

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	η Aquarii.			ζ Pegasi.			α Piscis Australis. (Fomalhaut)		
	R. A.	Dec. South.		R. A.	Dec. North.		R. A.	Dec. South.	
	^h 22	^m 28	^o 0	^h 22	^m 34	^o 10	^h 22	^m 49	
			^o 50			^o 5		^o 30	
Jan. 1	6 ^s 35 ^s	36 ^s 4 ^s	25 ^s 44 ^s	49 ^s 2 ^s	51 ^s 12 ^s	76 ^s 4 ^s			
11	6 ^s 29 ^s 0 ^s 06	37 ^s 1 ^s 0 ^s 7	25 ^s 38 ^s 0 ^s 06	48 ^s 2 ^s 1 ^s 0	51 ^s 04 ^s 0 ^s 06	76 ^s 0 ^s 4 ^s			
21	6 ^s 26 ^s 0 ^s 03	37 ^s 8 ^s 0 ^s 7	25 ^s 33 ^s 0 ^s 05	47 ^s 1 ^s 1 ^s 1	50 ^s 98 ^s 0 ^s 03	75 ^s 2 ^s 1 ^s 0			
31	6 ^s 25 ^s 0 ^s 01	38 ^s 3 ^s 0 ^s 5	25 ^s 31 ^s 0 ^s 02	46 ^s 0 ^s 1 ^s 1	50 ^s 95 ^s 0 ^s 01	74 ^s 2 ^s 1 ^s 3			
Feb. 10	6 ^s 27 ^s 0 ^s 02	38 ^s 8 ^s 0 ^s 5	25 ^s 32 ^s 0 ^s 01	45 ^s 0 ^s 1 ^s 0	50 ^s 94 ^s 0 ^s 03	72 ^s 9 ^s 1 ^s 4			
20	6 ^s 32 ^s 0 ^s 05	39 ^s 1 ^s 0 ^s 3	25 ^s 35 ^s 0 ^s 03	44 ^s 0 ^s 1 ^s 0	50 ^s 97 ^s 0 ^s 07	71 ^s 5 ^s 1 ^s 9			
Mar. 2	6 ^s 41 ^s 0 ^s 09	39 ^s 2 ^s 0 ^s 1	25 ^s 43 ^s 0 ^s 08	43 ^s 2 ^s 0 ^s 8	51 ^s 04 ^s 0 ^s 11	69 ^s 6 ^s 2 ^s 0			
12	6 ^s 52 ^s 0 ^s 11	39 ^s 1 ^s 0 ^s 1	25 ^s 54 ^s 0 ^s 11	42 ^s 7 ^s 0 ^s 5	51 ^s 15 ^s 0 ^s 14	67 ^s 6 ^s 2 ^s 0			
22	6 ^s 67 ^s 0 ^s 15	38 ^s 7 ^s 0 ^s 4	25 ^s 68 ^s 0 ^s 14	42 ^s 4 ^s 0 ^s 3	51 ^s 29 ^s 0 ^s 18	65 ^s 6 ^s 2 ^s 2			
Apr. 1	6 ^s 85 ^s 0 ^s 18	38 ^s 0 ^s 0 ^s 7	25 ^s 86 ^s 0 ^s 18	42 ^s 5 ^s 0 ^s 1	51 ^s 47 ^s 0 ^s 22	63 ^s 4 ^s 2 ^s 3			
11	7 ^s 07 ^s 0 ^s 22	37 ^s 1 ^s 0 ^s 9	26 ^s 07 ^s 0 ^s 21	42 ^s 9 ^s 0 ^s 4	51 ^s 69 ^s 0 ^s 25	61 ^s 1 ^s 2 ^s 3			
21	7 ^s 31 ^s 0 ^s 24	35 ^s 9 ^s 1 ^s 2	26 ^s 31 ^s 0 ^s 24	43 ^s 6 ^s 0 ^s 7	51 ^s 94 ^s 0 ^s 29	58 ^s 7 ^s 2 ^s 4			
May 1	7 ^s 58 ^s 0 ^s 27	34 ^s 5 ^s 1 ^s 4	26 ^s 58 ^s 0 ^s 27	44 ^s 7 ^s 1 ^s 1	52 ^s 23 ^s 0 ^s 36	56 ^s 4 ^s 1 ^s 8			
11	7 ^s 88 ^s 0 ^s 30	32 ^s 8 ^s 1 ^s 7	26 ^s 88 ^s 0 ^s 30	46 ^s 1 ^s 1 ^s 4	52 ^s 54 ^s 0 ^s 31	54 ^s 1 ^s 2 ^s 3			
21	8 ^s 19 ^s 0 ^s 31	31 ^s 0 ^s 1 ^s 8	27 ^s 19 ^s 0 ^s 31	47 ^s 7 ^s 1 ^s 6	52 ^s 88 ^s 0 ^s 34	51 ^s 9 ^s 2 ^s 2			
31	8 ^s 51 ^s 0 ^s 32	29 ^s 0 ^s 2 ^s 0	27 ^s 51 ^s 0 ^s 32	49 ^s 6 ^s 1 ^s 9	53 ^s 23 ^s 0 ^s 35	49 ^s 8 ^s 2 ^s 1			
June 10	8 ^s 83 ^s 0 ^s 32	27 ^s 0 ^s 2 ^s 0	27 ^s 83 ^s 0 ^s 32	51 ^s 7 ^s 2 ^s 1	53 ^s 59 ^s 0 ^s 36	48 ^s 0 ^s 1 ^s 8			
20	9 ^s 15 ^s 0 ^s 30	24 ^s 9 ^s 2 ^s 0	28 ^s 15 ^s 0 ^s 31	53 ^s 9 ^s 2 ^s 3	53 ^s 95 ^s 0 ^s 35	46 ^s 4 ^s 1 ^s 6			
30	9 ^s 45 ^s 0 ^s 28	22 ^s 9 ^s 2 ^s 0	28 ^s 46 ^s 0 ^s 28	56 ^s 2 ^s 2 ^s 3	54 ^s 30 ^s 0 ^s 35	45 ^s 1 ^s 1 ^s 3			
July 10	9 ^s 73 ^s 0 ^s 25	20 ^s 9 ^s 2 ^s 0	28 ^s 74 ^s 0 ^s 25	58 ^s 5 ^s 2 ^s 2	54 ^s 63 ^s 0 ^s 33	44 ^s 1 ^s 1 ^s 0			
20	9 ^s 98 ^s 0 ^s 22	19 ^s 1 ^s 1 ^s 7	28 ^s 99 ^s 0 ^s 22	60 ^s 7 ^s 2 ^s 2	54 ^s 93 ^s 0 ^s 30	43 ^s 5 ^s 0 ^s 6			
30	10 ^s 20 ^s 0 ^s 18	17 ^s 4 ^s 1 ^s 7	29 ^s 21 ^s 0 ^s 18	62 ^s 9 ^s 2 ^s 0	55 ^s 20 ^s 0 ^s 27	43 ^s 2 ^s 0 ^s 3			
Aug. 9	10 ^s 38 ^s 0 ^s 13	16 ^s 0 ^s 1 ^s 4	29 ^s 39 ^s 0 ^s 13	64 ^s 9 ^s 2 ^s 0	55 ^s 42 ^s 0 ^s 22	43 ^s 2 ^s 0 ^s 0			
19	10 ^s 51 ^s 0 ^s 09	14 ^s 7 ^s 1 ^s 3	29 ^s 52 ^s 0 ^s 13	66 ^s 8 ^s 1 ^s 9	55 ^s 60 ^s 0 ^s 18	43 ^s 2 ^s 0 ^s 4			
29	10 ^s 60 ^s 0 ^s 06	13 ^s 7 ^s 0 ^s 8	29 ^s 62 ^s 0 ^s 10	68 ^s 5 ^s 1 ^s 7	55 ^s 73 ^s 0 ^s 13	44 ^s 2 ^s 0 ^s 6			
Sept. 8	10 ^s 65 ^s 0 ^s 05	12 ^s 9 ^s 0 ^s 6	29 ^s 68 ^s 0 ^s 06	69 ^s 9 ^s 1 ^s 4	55 ^s 81 ^s 0 ^s 08	44 ^s 2 ^s 0 ^s 9			
18	10 ^s 66 ^s 0 ^s 01	12 ^s 3 ^s 0 ^s 6	29 ^s 69 ^s 0 ^s 01	71 ^s 1 ^s 1 ^s 2	55 ^s 84 ^s 0 ^s 03	45 ^s 1 ^s 1 ^s 2			
28	10 ^s 64 ^s 0 ^s 02	11 ^s 9 ^s 0 ^s 4	29 ^s 67 ^s 0 ^s 02	71 ^s 1 ^s 1 ^s 0	55 ^s 82 ^s 0 ^s 02	46 ^s 3 ^s 1 ^s 3			
Oct. 8	10 ^s 58 ^s 0 ^s 06	11 ^s 8 ^s 0 ^s 1	29 ^s 61 ^s 0 ^s 06	72 ^s 1 ^s 0 ^s 7	55 ^s 82 ^s 0 ^s 05	47 ^s 6 ^s 1 ^s 3			
18	10 ^s 49 ^s 0 ^s 09	11 ^s 8 ^s 0 ^s 0	29 ^s 53 ^s 0 ^s 08	72 ^s 8 ^s 0 ^s 5	55 ^s 77 ^s 0 ^s 09	48 ^s 9 ^s 1 ^s 4			
28	10 ^s 39 ^s 0 ^s 10	11 ^s 8 ^s 0 ^s 0	29 ^s 53 ^s 0 ^s 10	73 ^s 3 ^s 0 ^s 3	55 ^s 68 ^s 0 ^s 12	50 ^s 3 ^s 1 ^s 3			
Nov. 7	10 ^s 28 ^s 0 ^s 11	12 ^s 0 ^s 0 ^s 2	29 ^s 43 ^s 0 ^s 11	73 ^s 6 ^s 0 ^s 3	55 ^s 56 ^s 0 ^s 13	51 ^s 6 ^s 1 ^s 3			
17	10 ^s 16 ^s 0 ^s 12	12 ^s 3 ^s 0 ^s 3	29 ^s 32 ^s 0 ^s 12	73 ^s 6 ^s 0 ^s 0	55 ^s 43 ^s 0 ^s 13	52 ^s 7 ^s 1 ^s 1			
27	10 ^s 04 ^s 0 ^s 12	12 ^s 8 ^s 0 ^s 5	29 ^s 20 ^s 0 ^s 12	73 ^s 4 ^s 0 ^s 2	55 ^s 29 ^s 0 ^s 14	53 ^s 7 ^s 1 ^s 0			
Dec. 7	9 ^s 93 ^s 0 ^s 11	12 ^s 8 ^s 0 ^s 5	29 ^s 08 ^s 0 ^s 12	73 ^s 0 ^s 0 ^s 4	55 ^s 14 ^s 0 ^s 15	53 ^s 7 ^s 0 ^s 8			
17	9 ^s 83 ^s 0 ^s 10	13 ^s 3 ^s 0 ^s 6	28 ^s 96 ^s 0 ^s 12	73 ^s 0 ^s 0 ^s 5	55 ^s 00 ^s 0 ^s 14	54 ^s 5 ^s 0 ^s 6			
27	9 ^s 75 ^s 0 ^s 08	13 ^s 9 ^s 0 ^s 7	28 ^s 86 ^s 0 ^s 10	72 ^s 5 ^s 0 ^s 8	55 ^s 00 ^s 0 ^s 14	55 ^s 1 ^s 0 ^s 2			
37	9 ^s 68 ^s 0 ^s 07	14 ^s 6 ^s 0 ^s 7	28 ^s 76 ^s 0 ^s 10	71 ^s 7 ^s 0 ^s 9	54 ^s 86 ^s 0 ^s 12	55 ^s 3 ^s 0 ^s 0			
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APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	α Pegasi. (Markab)		γ Piscium.		κ Piscium.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	^h ^m 22 57	[°] ['] 14 26	^h ^m 23 9	[°] ['] 2 30	^h ^m 23 19	[°] ['] 0 29
Jan. 1	44° 10' 0.09	55° 0' 1.1	51° 33' 0.08	46° 1' 0.7	42° 31' 0.08	3° 9' 0.7
11	44° 01' 0.06	53° 9' 1.1	51° 25' 0.06	45° 4' 0.8	42° 23' 0.07	3° 2' 0.6
21	43° 95' 0.04	52° 8' 1.3	51° 19' 0.04	44° 6' 0.6	42° 16' 0.05	2° 6' 0.5
31	43° 91' 0.02	51° 5' 1.2	51° 15' 0.02	44° 0' 0.6	42° 11' 0.03	2° 1' 0.5
Feb. 10	43° 89' 0.01	50° 3' 1.1	51° 13' 0.01	43° 4' 0.5	42° 08' 0.00	1° 6' 0.3
20	43° 90' 0.05	49° 2' 1.0	51° 14' 0.03	42° 9' 0.2	42° 08' 0.03	1° 3' 0.2
Mar. 2	43° 95' 0.08	48° 2' 0.8	51° 17' 0.08	42° 7' 0.1	42° 11' 0.06	1° 1' 0.1
12	44° 03' 0.12	47° 4' 0.5	51° 25' 0.11	42° 6' 0.2	42° 17' 0.10	1° 2' 0.3
22	44° 15' 0.16	46° 9' 0.2	51° 36' 0.14	42° 8' 0.4	42° 27' 0.13	1° 5' 0.6
Apr. 1	44° 31' 0.19	46° 7' 0.1	51° 50' 0.18	43° 2' 0.9	42° 40' 0.17	2° 1' 0.9
11	44° 50' 0.23	46° 8' 0.5	51° 68' 0.22	44° 1' 1.0	42° 57' 0.21	3° 0' 1.1
21	44° 73' 0.26	47° 3' 0.8	51° 90' 0.25	45° 1' 1.3	43° 78' 0.24	4° 1' 1.4
May 1	44° 99' 0.29	48° 1' 1.2	52° 15' 0.27	46° 4' 1.5	43° 02' 0.27	5° 5' 1.6
11	45° 28' 0.31	49° 3' 1.5	52° 42' 0.30	47° 9' 1.8	43° 29' 0.30	7° 1' 1.8
21	45° 59' 0.33	50° 8' 1.8	52° 72' 0.32	49° 7' 1.9	43° 59' 0.31	8° 9' 1.9
31	45° 92' 0.33	52° 6' 2.0	53° 04' 0.33	51° 6' 2.1	43° 90' 0.32	10° 8' 2.1
June 10	46° 25' 0.32	54° 6' 2.2	53° 37' 0.32	53° 7' 2.1	44° 22' 0.32	12° 9' 2.1
20	46° 57' 0.32	56° 8' 2.3	53° 69' 0.32	55° 8' 2.1	44° 54' 0.32	15° 0' 2.1
30	46° 89' 0.29	59° 1' 2.4	54° 01' 0.30	57° 9' 2.1	44° 86' 0.31	17° 1' 2.0
July 10	47° 18' 0.27	61° 5' 2.3	54° 31' 0.27	60° 0' 2.0	45° 17' 0.28	19° 1' 2.0
20	47° 45' 0.24	63° 8' 2.4	54° 58' 0.25	62° 0' 1.9	45° 45' 0.25	21° 1' 1.8
30	47° 69' 0.20	66° 2' 2.2	54° 83' 0.21	63° 9' 1.7	45° 70' 0.22	22° 9' 1.6
Aug. 9	47° 89' 0.16	68° 4' 2.1	55° 04' 0.18	65° 6' 1.5	45° 92' 0.18	24° 5' 1.4
19	48° 05' 0.12	70° 5' 1.9	55° 22' 0.13	67° 1' 1.2	46° 10' 0.14	25° 9' 1.2
29	48° 17' 0.08	72° 4' 1.7	55° 35' 0.09	68° 3' 1.1	46° 24' 0.11	27° 1' 0.9
Sept. 8	48° 25' 0.03	74° 1' 1.5	55° 44' 0.06	69° 4' 0.8	46° 35' 0.06	28° 0' 0.6
18	48° 28' 0.00	75° 6' 1.3	55° 50' 0.01	70° 2' 0.5	46° 41' 0.02	28° 6' 0.5
28	48° 28' 0.03	76° 9' 1.0	55° 51' 0.02	70° 7' 0.4	46° 43' 0.01	29° 1' 0.2
Oct. 8	48° 25' 0.07	77° 9' 0.7	55° 49' 0.05	71° 1' 0.1	46° 42' 0.04	29° 3' 0.0
18	48° 18' 0.08	78° 6' 0.5	55° 44' 0.07	71° 2' 0.0	46° 38' 0.07	29° 3' 0.1
28	48° 10' 0.10	79° 1' 0.2	55° 37' 0.09	71° 2' 0.2	46° 31' 0.08	29° 2' 0.3
Nov. 7	48° 00' 0.11	79° 3' 0.0	55° 28' 0.10	71° 0' 0.4	46° 23' 0.10	28° 9' 0.4
17	47° 89' 0.12	79° 3' 0.2	55° 18' 0.10	70° 6' 0.5	46° 13' 0.10	28° 5' 0.6
27	47° 77' 0.12	79° 1' 0.5	55° 08' 0.11	70° 1' 0.5	46° 03' 0.11	27° 9' 0.6
Dec. 7	47° 65' 0.12	78° 6' 0.7	54° 97' 0.11	69° 6' 0.7	45° 92' 0.10	27° 3' 0.6
17	47° 53' 0.10	77° 9' 0.8	54° 86' 0.09	68° 9' 0.7	45° 82' 0.10	26° 7' 0.7
27	47° 43' 0.09	77° 1' 1.0	54° 77' 0.09	68° 2' 0.7	45° 72' 0.09	26° 0' 0.7
37	47° 34' 0.09	76° 1' 1.0	54° 68' 0.09	67° 5' 0.7	45° 63' 0.09	25° 3' 0.7

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	♈ Piscium.		γ Cephei.	
	R. A.	Dec. North.	R. A.	Dec. North.
	^h 23	^o 4	^h 23	^o 76
Jan. 1	^m 32 ^s 42.92 ^a 0.09	51 ['] 46.9 ["] 0.7	^m 33 ^s 32.05 ^a 0.84	51 ['] 5.2 ["] 0.9
11	41.93 0.08	46.2 0.8	31.21 0.76	4.3 1.4
21	41.85 0.06	45.4 0.7	30.45 0.66	2.9 2.0
31	41.79 0.04	44.7 0.7	29.79 0.55	0.9 2.4
Feb. 10	41.75 0.02	44.0 0.5	29.24 0.41	50 58.5 2.8
20	41.73 0.02	43.5 0.4	28.83 0.24	55.7 3.0
Mar. 2	41.75 0.04	43.1 0.2	28.59 0.06	52.7 3.1
12	41.79 0.09	42.9 0.0	28.53 0.13	49.6 3.3
22	41.88 0.13	42.9 0.3	28.66 0.32	46.3 2.8
Apr. 1	42.01 0.16	43.2 0.6	28.98 0.48	43.5 2.6
11	42.17 0.19	43.8 0.9	29.46 0.64	40.9 2.1
21	42.36 0.23	44.7 1.1	30.10 0.77	38.8 1.7
May 1	42.59 0.27	45.8 1.5	30.87 0.88	37.1 1.2
11	42.86 0.29	47.3 1.6	31.75 0.96	35.9 0.6
21	43.15 0.31	48.9 1.9	32.71 1.02	35.3 0.1
31	43.46 0.32	50.8 2.0	33.73 1.03	35.2 0.5
June 10	43.78 0.32	52.8 2.1	34.76 1.03	35.7 1.1
20	44.11 0.32	54.9 2.1	35.79 0.99	36.8 1.7
30	44.43 0.31	57.0 2.2	36.78 0.94	38.5 2.1
July 10	44.74 0.29	51 59.2 2.0	37.72 0.85	40.6 2.6
20	45.03 0.26	52 1.2 1.9	38.57 0.75	43.2 3.0
30	45.29 0.23	3.1 1.8	39.32 0.63	46.2 3.3
Aug. 9	45.52 0.19	4.9 1.7	39.95 0.51	49.5 3.6
19	45.71 0.16	6.6 1.4	40.46 0.37	53.1 3.7
29	45.87 0.11	8.0 1.1	40.83 0.23	50 56.8 3.8
Sept. 8	45.98 0.07	9.1 0.9	41.06 0.08	51 0.6 3.9
18	46.05 0.04	10.0 0.7	41.14 0.05	4.5 3.7
28	46.09 0.00	10.7 0.5	41.09 0.20	8.2 3.7
Oct. 8	46.09 0.03	11.2 0.3	40.89 0.33	11.9 3.5
18	46.06 0.05	11.5 0.0	40.56 0.45	15.4 3.1
28	46.01 0.07	11.5 0.1	40.11 0.57	18.5 2.8
Nov. 7	45.94 0.09	11.4 0.3	39.54 0.66	21.3 2.4
17	45.85 0.10	11.1 0.4	38.88 0.75	23.7 1.8
27	45.75 0.10	10.7 0.5	38.13 0.81	25.5 1.3
Dec. 7	45.65 0.11	10.2 0.6	37.32 0.85	26.8 0.6
17	45.54 0.10	9.6 0.8	36.47 0.85	27.4 0.1
27	45.44 0.10	8.8 0.7	35.62 0.84	27.5 0.6
37	32 45.34 0.10	52 8.1 0.7	33 34.78 0.84	51 26.9 0.6

APPARENT PLACES, FOR THE UPPER TRANSIT AT GREENWICH.

Month and Day.	♂ Sculptoria.			♂ Piscium.		
	R. A.	Dec. South.		R. A.	Dec. North.	
	^h 23	^o 28		^h 23	^o 6	
Jan. 1	^m 41 ^s 34.96 ["] 0.11	54 42.6 0.1		^m 52 ^s 4.53 ["] 0.10	5 1.5 0.7	
11	34.85 0.11	42.5 0.5		4.43 0.09	0.8 0.8	
21	34.74 0.08	42.0 0.7		4.34 0.07	5 0.0 0.7	
31	34.66 0.06	41.3 1.1		4.27 0.06	4 59.3 0.7	
Feb. 10	34.60 0.03	40.2 1.3		4.21 0.03	58.6 0.6	
20	34.57 0.00	38.9 1.6		4.18 0.01	58.0 0.5	
Mar. 2	34.57 0.03	37.3 1.8		4.17 0.02	57.5 0.2	
12	34.60 0.09	35.5 2.3		4.19 0.07	57.3 0.0	
Apr. 22	34.69 0.11	33.2 2.3		4.26 0.10	57.3 0.2	
1	34.80 0.16	30.9 2.4		4.36 0.15	57.5 0.5	
11	34.96 0.20	28.5 2.5		4.51 0.18	58.0 0.8	
21	35.16 0.24	26.0 2.5		4.69 0.22	58.8 1.1	
May 1	35.40 0.27	23.5 2.6		4.91 0.25	4 59.9 1.3	
11	35.67 0.30	20.9 2.4		5.16 0.28	5 1.2 1.6	
21	35.97 0.33	18.5 2.4		5.44 0.31	2.8 1.8	
31	36.30 0.35	16.1 2.2		5.75 0.32	4.6 2.0	
June 10	36.65 0.35	13.9 2.0		6.07 0.32	6.6 2.1	
20	37.00 0.35	11.9 1.7		6.39 0.33	8.7 2.1	
30	37.35 0.35	10.2 1.4		6.72 0.31	10.8 2.2	
July 10	37.70 0.32	8.8 1.0		7.03 0.30	13.0 2.0	
20	38.02 0.30	7.8 0.7		7.33 0.27	15.0 2.0	
30	38.32 0.26	7.1 0.3		7.60 0.24	17.0 1.9	
Aug. 9	38.58 0.22	6.8 0.1		7.84 0.21	18.9 1.7	
19	38.80 0.18	6.9 0.4		8.05 0.17	20.6 1.5	
Sept. 29	38.98 0.13	7.3 0.8		8.22 0.14	22.1 1.2	
8	39.11 0.09	8.1 1.1		8.36 0.09	23.3 1.0	
18	39.20 0.04	9.2 1.2		8.45 0.05	24.3 0.8	
28	39.24 0.00	10.4 1.4		8.50 0.03	25.1 0.5	
Oct. 8	39.24 0.04	11.8 1.5		8.53 0.01	25.6 0.4	
18	39.20 0.07	13.3 1.5		8.52 0.04	26.0 0.1	
28	39.13 0.10	14.8 1.5		8.48 0.06	26.1 0.1	
Nov. 7	39.03 0.11	16.3 1.3		8.42 0.08	26.0 0.2	
17	38.92 0.13	17.6 1.2		8.34 0.09	25.8 0.3	
27	38.79 0.14	18.8 0.9		8.25 0.09	25.5 0.5	
Dec. 7	38.65 0.14	19.7 0.6		8.16 0.11	25.0 0.6	
17	38.51 0.13	20.3 0.4		8.05 0.10	24.4 0.7	
27	38.38 0.13	20.7 0.0		7.95 0.10	23.7 0.8	
37	41 38.25 0.13	54 20.7 0.0		52 7.85 0.10	5 22.9 0.8	

FIXED STARS.

TABLE,

Showing the *Correction* to be applied to the *preceding* Apparent Places of Five Polar Stars, for the terms of Nutation involving 2 ζ .

Arg.		α Urs. Min.		51 Cephei.		σ Octantis.		δ Urs. Mnh.		λ Urs. Min.		Arg.
ζ		R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	ζ
0	0											0
0	180	— .229	+ .03	+ .018	+ .09	— .025	— .09	— .008	— .09	— .159	— .08	90
1	181	.231	.02	.014	.09	.040	.09	.005	.09	.151	.08	91
2	182	.233	.02	.009	.09	.055	.09	— .003	.09	.143	.08	92
3	183	.235	.02	.005	.09	.070	.09	.000	.09	.135	.08	93
4	184	.237	.01	+ .001	.09	.085	.09	+ .003	.09	.127	.08	94
5	185	.238	.01	— .003	.09	.100	.09	.006	.09	.118	.08	95
6	186	.239	+ .01	.008	.09	.115	.08	.008	.09	.109	.08	96
7	187	.240	.00	.012	.09	.130	.08	.011	.09	.100	.08	97
8	188	.240	.00	.017	.09	.144	.08	.013	.09	.091	.08	98
9	189	.240	.00	.021	.09	.158	.08	.016	.09	.082	.08	99
10	190	.240	.00	.025	.09	.172	.08	.019	.09	.073	.09	100
11	191	.240	— .01	.029	.09	.186	.08	.021	.09	.064	.09	101
12	192	.239	.01	.033	.09	.200	.08	.024	.09	.055	.09	102
13	193	.238	.01	.037	.08	.213	.08	.026	.08	.046	.09	103
14	194	.236	.02	.041	.08	.226	.08	.029	.08	.036	.09	104
15	195	.235	.02	.045	.08	.239	.08	.032	.08	.026	.09	105
16	196	.233	.02	.049	.08	.251	.07	.034	.08	.017	.09	106
17	197	.231	.02	.053	.08	.263	.07	.037	.08	— .008	.09	107
18	198	.229	.03	.056	.08	.275	.07	.039	.08	+ .002	.09	108
19	199	.226	.03	.060	.08	.287	.07	.042	.08	.012	.09	109
20	200	.223	.03	.065	.08	.299	.07	.044	.07	.022	.09	110
21	201	.220	.03	.069	.07	.310	.07	.046	.07	.032	.09	111
22	202	.216	.04	.073	.07	.320	.06	.048	.07	.041	.09	112
23	203	.212	.04	.076	.07	.330	.06	.050	.07	.050	.09	113
24	204	.208	.04	.079	.07	.340	.06	.052	.07	.060	.08	114
25	205	.204	.04	.082	.07	.350	.06	.054	.06	.070	.08	115
26	206	.200	.05	.085	.06	.359	.05	.055	.06	.079	.08	116
27	207	.196	.05	.088	.06	.368	.05	.057	.06	.088	.08	117
28	208	.190	.05	.091	.06	.376	.05	.059	.06	.097	.08	118
29	209	.185	.05	.094	.05	.383	.04	.061	.06	.106	.08	119
30	210	.179	.05	.097	.05	.390	.04	.063	.05	.115	.08	120
31	211	.173	.06	.100	.05	.396	.04	.064	.05	.124	.08	121
32	212	.168	.06	.103	.05	.402	.03	.065	.05	.133	.08	122
33	213	.162	.06	.105	.04	.408	.03	.067	.04	.142	.07	123
34	214	.155	.06	.107	.04	.413	.03	.068	.04	.150	.07	124
35	215	.148	.06	.109	.04	.418	.03	.070	.04	.158	.07	125
36	216	.141	.07	.111	.04	.423	.02	.071	.04	.165	.07	126
37	217	.133	.07	.113	.03	.427	.02	.072	.03	.172	.06	127
38	218	.126	.07	.115	.03	.430	.01	.073	.03	.179	.06	128
39	219	.119	.07	.116	.03	.432	.01	.074	.03	.186	.06	129
40	220	.113	.07	.117	.03	.434	— .01	.075	.02	.193	.06	130
41	221	.106	.07	.118	.02	.435	.00	.076	.02	.199	.05	131
42	222	.099	.08	.119	.02	.436	.00	.077	.02	.206	.05	132
43	223	.092	.08	.120	.01	.436	.00	.077	.02	.212	.05	133
44	224	.084	.08	.121	.01	.436	.00	.078	.01	.218	.05	134
45	225	— .075	— .08	— .122	+ .01	— .436	+ .01	+ .078	— .01	+ .224	— .04	135

NOTE.—When the *Argument* is on the *right-hand* side of the Table, the sign of the correction must be changed.

TABLE,

Showing the *Correction* to be applied to the *preceding* Apparent Places of Five Polar Stars, for the terms of Nutation involving 2ϵ .

Arg.		α Urs. Min.		51 Cephei.		σ Octantis.		δ Urs. Min.		λ Urs. Min.		Arg.	
ϵ		R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	ϵ	
o	o	a	"	a	"	a	"	a	"	a	"	o	o
45	225	— ⁰⁷⁵	— ⁰⁸	— ¹²²	+ ⁰¹	— ⁴³⁶	+ ⁰¹	+ ⁰⁷⁸	— ⁰¹	+ ²²⁴	— ⁰⁴	135	315
46	226	— ⁰⁶⁷	— ⁰⁸	— ¹²³	— ⁰⁰	— ⁴³⁵	— ⁰¹	— ⁰⁷⁸	— ⁰¹	— ²²⁹	— ⁰⁴	136	316
47	227	— ⁰⁵⁸	— ⁰⁸	— ¹²⁴	— ⁰⁰	— ⁴³³	— ⁰²	— ⁰⁷⁹	— ⁰⁰	— ²³⁴	— ⁰⁴	137	317
48	228	— ⁰⁵⁰	— ⁰⁸	— ¹²⁴	— ⁰⁰	— ⁴³¹	— ⁰²	— ⁰⁷⁹	— ⁰⁰	— ²³⁹	— ⁰⁴	138	318
49	229	— ⁰⁴²	— ⁰⁸	— ¹²⁴	— ⁰¹	— ⁴²⁸	— ⁰²	— ⁰⁷⁸	— ⁰⁰	— ²⁴⁴	— ⁰⁴	139	319
50	230	— ⁰³⁴	— ⁰⁸	— ¹²⁴	— ⁰¹	— ⁴²⁵	— ⁰²	— ⁰⁷⁸	+ ⁰¹	— ²⁴⁹	— ⁰³	140	320
51	231	— ⁰²⁶	— ⁰⁸	— ¹²³	— ⁰¹	— ⁴²¹	— ⁰³	— ⁰⁷⁸	— ⁰¹	— ²⁵³	— ⁰³	141	321
52	232	— ⁰¹⁷	— ⁰⁸	— ¹²³	— ⁰²	— ⁴¹⁷	— ⁰³	— ⁰⁷⁸	— ⁰¹	— ²⁵⁶	— ⁰³	142	322
53	233	— ⁰⁰⁸	— ⁰⁸	— ¹²²	— ⁰²	— ⁴¹²	— ⁰³	— ⁰⁷⁷	— ⁰²	— ²⁵⁹	— ⁰²	143	323
54	234	— ⁰⁰⁰	— ⁰⁸	— ¹²²	— ⁰²	— ⁴⁰⁷	— ⁰⁴	— ⁰⁷⁷	— ⁰²	— ²⁶²	— ⁰²	144	324
55	235	+ ⁰⁰⁸	— ⁰⁸	— ¹²¹	— ⁰²	— ⁴⁰¹	— ⁰⁴	— ⁰⁷⁶	— ⁰²	— ²⁶⁵	— ⁰²	145	325
56	236	— ⁰¹⁶	— ⁰⁸	— ¹²¹	— ⁰³	— ³⁹⁵	— ⁰⁴	— ⁰⁷⁵	— ⁰³	— ²⁶⁷	— ⁰²	146	326
57	237	— ⁰²⁵	— ⁰⁸	— ¹²⁰	— ⁰³	— ³⁸⁹	— ⁰⁴	— ⁰⁷⁴	— ⁰³	— ²⁶⁹	— ⁰¹	147	327
58	238	— ⁰³³	— ⁰⁸	— ¹¹⁹	— ⁰³	— ³⁸²	— ⁰⁵	— ⁰⁷³	— ⁰³	— ²⁷¹	— ⁰¹	148	328
59	239	— ⁰⁴²	— ⁰⁸	— ¹¹⁷	— ⁰⁴	— ³⁷⁴	— ⁰⁵	— ⁰⁷²	— ⁰³	— ²⁷³	— ⁰¹	149	329
60	240	— ⁰⁵⁰	— ⁰⁸	— ¹¹⁵	— ⁰⁴	— ³⁶⁵	— ⁰⁵	— ⁰⁷¹	— ⁰⁴	— ²⁷⁴	— ⁰⁰	150	330
61	241	— ⁰⁵⁸	— ⁰⁸	— ¹¹⁴	— ⁰⁴	— ³⁵⁶	— ⁰⁵	— ⁰⁷⁰	— ⁰⁴	— ²⁷⁵	— ⁰⁰	151	331
62	242	— ⁰⁶⁶	— ⁰⁸	— ¹¹²	— ⁰⁴	— ³⁴⁷	— ⁰⁶	— ⁰⁶⁹	— ⁰⁴	— ²⁷⁵	— ⁰⁰	152	332
63	243	— ⁰⁷⁴	— ⁰⁸	— ¹¹⁰	— ⁰⁵	— ³³⁸	— ⁰⁶	— ⁰⁶⁸	— ⁰⁵	— ²⁷⁵	+ ⁰¹	153	333
64	244	— ⁰⁸²	— ⁰⁸	— ¹⁰⁸	— ⁰⁵	— ³²⁸	— ⁰⁶	— ⁰⁶⁶	— ⁰⁵	— ²⁷⁵	— ⁰¹	154	334
65	245	— ⁰⁹⁰	— ⁰⁸	— ¹⁰⁶	— ⁰⁵	— ³¹⁸	— ⁰⁶	— ⁰⁶⁴	— ⁰⁵	— ²⁷⁵	— ⁰¹	155	335
66	246	— ⁰⁹⁷	— ⁰⁷	— ¹⁰²	— ⁰⁶	— ³⁰⁷	— ⁰⁷	— ⁰⁶²	— ⁰⁵	— ²⁷⁴	— ⁰²	156	336
67	247	— ¹⁰⁵	— ⁰⁷	— ¹⁰⁰	— ⁰⁶	— ²⁹⁶	— ⁰⁷	— ⁰⁶¹	— ⁰⁶	— ²⁷²	— ⁰²	157	337
68	248	— ¹¹²	— ⁰⁷	— ⁰⁹⁸	— ⁰⁶	— ²⁸⁴	— ⁰⁷	— ⁰⁶⁰	— ⁰⁶	— ²⁷⁰	— ⁰²	158	338
69	249	— ¹²⁰	— ⁰⁷	— ⁰⁹⁵	— ⁰⁶	— ²⁷²	— ⁰⁷	— ⁰⁵⁸	— ⁰⁶	— ²⁶⁸	— ⁰²	159	339
70	250	— ¹²⁷	— ⁰⁷	— ⁰⁹³	— ⁰⁶	— ²⁶¹	— ⁰⁷	— ⁰⁵⁶	— ⁰⁶	— ²⁶⁶	— ⁰³	160	340
71	251	— ¹³⁴	— ⁰⁷	— ⁰⁹⁰	— ⁰⁷	— ²⁴⁹	— ⁰⁸	— ⁰⁵⁴	— ⁰⁶	— ²⁶³	— ⁰³	161	341
72	252	— ¹⁴¹	— ⁰⁷	— ⁰⁸⁷	— ⁰⁷	— ²³⁷	— ⁰⁸	— ⁰⁵²	— ⁰⁷	— ²⁶⁰	— ⁰³	162	342
73	253	— ¹⁴⁸	— ⁰⁶	— ⁰⁸⁴	— ⁰⁷	— ²²⁴	— ⁰⁸	— ⁰⁵⁰	— ⁰⁷	— ²⁵⁷	— ⁰⁴	163	343
74	254	— ¹⁵⁴	— ⁰⁶	— ⁰⁸⁰	— ⁰⁷	— ²¹¹	— ⁰⁸	— ⁰⁴⁸	— ⁰⁷	— ²⁵⁴	— ⁰⁴	164	344
75	255	— ¹⁶¹	— ⁰⁶	— ⁰⁷⁷	— ⁰⁷	— ¹⁹⁷	— ⁰⁸	— ⁰⁴⁶	— ⁰⁷	— ²⁵⁰	— ⁰⁴	165	345
76	256	— ¹⁶⁷	— ⁰⁶	— ⁰⁷⁴	— ⁰⁸	— ¹⁸³	— ⁰⁹	— ⁰⁴⁵	— ⁰⁸	— ²⁴⁶	— ⁰⁴	166	346
77	257	— ¹⁷³	— ⁰⁶	— ⁰⁷⁰	— ⁰⁸	— ¹⁶⁹	— ⁰⁹	— ⁰⁴³	— ⁰⁸	— ²⁴²	— ⁰⁵	167	347
78	258	— ¹⁷⁸	— ⁰⁵	— ⁰⁶⁶	— ⁰⁸	— ¹⁵⁵	— ⁰⁹	— ⁰⁴⁰	— ⁰⁸	— ²³⁷	— ⁰⁵	168	348
79	259	— ¹⁸⁴	— ⁰⁵	— ⁰⁶²	— ⁰⁸	— ¹⁴¹	— ⁰⁹	— ⁰³⁷	— ⁰⁸	— ²³²	— ⁰⁵	169	349
80	260	— ¹⁸⁹	— ⁰⁵	— ⁰⁵⁹	— ⁰⁸	— ¹²⁶	— ⁰⁹	— ⁰³⁴	— ⁰⁸	— ²²⁷	— ⁰⁶	170	350
81	261	— ¹⁹⁴	— ⁰⁵	— ⁰⁵⁵	— ⁰⁸	— ¹¹¹	— ⁰⁹	— ⁰³¹	— ⁰⁸	— ²²¹	— ⁰⁶	171	351
82	262	— ¹⁹⁹	— ⁰⁴	— ⁰⁵⁰	— ⁰⁸	— ⁰⁹⁶	— ⁰⁹	— ⁰³⁰	— ⁰⁸	— ²¹⁵	— ⁰⁶	172	352
83	263	— ²⁰⁴	— ⁰⁴	— ⁰⁴⁷	— ⁰⁹	— ⁰⁸¹	— ⁰⁹	— ⁰²⁷	— ⁰⁸	— ²⁰⁹	— ⁰⁶	173	353
84	264	— ²⁰⁷	— ⁰⁴	— ⁰⁴³	— ⁰⁹	— ⁰⁶⁶	— ⁰⁹	— ⁰²⁴	— ⁰⁹	— ²⁰³	— ⁰⁶	174	354
85	265	— ²¹²	— ⁰⁴	— ⁰³⁹	— ⁰⁹	— ⁰⁵¹	— ⁰⁹	— ⁰²²	— ⁰⁹	— ¹⁹⁶	— ⁰⁷	175	355
86	266	— ²¹⁶	— ⁰³	— ⁰³⁵	— ⁰⁹	— ⁰³⁶	— ⁰⁹	— ⁰²⁰	— ⁰⁹	— ¹⁸⁹	— ⁰⁷	176	356
87	267	— ²²⁰	— ⁰³	— ⁰³⁰	— ⁰⁹	— ⁰²¹	— ⁰⁹	— ⁰¹⁷	— ⁰⁹	— ¹⁸²	— ⁰⁷	177	357
88	268	— ²²³	— ⁰³	— ⁰²⁶	— ⁰⁹	— ⁰⁰⁶	— ⁰⁹	— ⁰¹³	— ⁰⁹	— ¹⁷⁵	— ⁰⁷	178	358
89	269	— ²²⁶	— ⁰³	— ⁰²²	— ⁰⁹	+ ⁰⁰⁹	— ⁰⁹	— ⁰¹¹	— ⁰⁹	— ¹⁶⁷	— ⁰⁷	179	359
90	270	+ ²²⁹	— ⁰³	— ⁰¹⁸	— ⁰⁹	+ ⁰²⁵	+ ⁰⁹	+ ⁰⁰⁸	+ ⁰⁹	+ ¹⁵⁹	+ ⁰⁸	180	360

NOTE.—When the Argument is on the right-hand side of the Table, the sign of the correction must be changed.

424 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
Jan. 1	Moon II. L.	- -	^h 16 ^m 58 ^s 9.99	138°.98	69°.42	S. 27° 37' 4.5"	-157°.2
	Moon II. U.	28.0	17 26 1.33	139°.44	69°.51	27 57 59.7	- 51.8
2	Moon II. L.	- -	17 53 53.34	139°.08	69°.40	S. 27° 57' 46.8"	+ 53.8
	Moon II. U.	29.1	18 21 35.98	137°.89	69°.08	27 36 35.8	157.6
3	Moon II. L.	- -	18 48 59.73	135°.95	68°.57	S. 26° 54' 59.3"	+257.7
4	Moon I. U.	0.3	19 13 40.56	133°.53	67°.90	S. 25° 53' 52.5"	+352.4
	Moon I. L.	- -	19 40 5.48	130°.57	67°.13	24 34 28.0	440.5
5	Moon I. U.	1.3	20 5 53.31	127°.38	66°.29	S. 22° 58' 11.1"	+521.0
	Moon I. L.	- -	20 31 2.40	124°.15	65°.44	21 6 35.5	593.6
6	Moon I. U.	2.3	20 55 33.26	121°.04	64°.62	S. 19° 1' 17.3"	+658.1
	Moon I. L.	- -	21 19 28.38	118°.21	63°.87	16 43 54.1	714.5
7	Moon I. U.	3.4	21 42 51.86	115°.78	63°.23	S. 14° 15' 59.9"	+763.3
	Moon I. L.	- -	22 5 49.16	113°.86	62°.73	11 39 5.4	804.6
e' Aquarii -		4	21 58 48.75			14 33	
	e' Aquarii -	6	22 2 59.97			S. 11° 31'	
8	e' Aquarii -	4	21 58 48.75			S. 14° 33'	
	e' Aquarii -	6	22 2 59.96			11 31	
Moon I. U.		4.4	22 28 26.77	112°.51	62°.39	8 54 37.8	+838.8
	Moon I. L.	- -	22 50 52.05	111°.81	62°.23	6 4 0.5	866.3
λ Aquarii -		4	22 45 15.19			8 20	
	81 Aquarii -	6	22 54 3.91			S. 7° 49'	
9	λ Aquarii -	4	22 45 15.18			S. 8° 20'	
	81 Aquarii -	6	22 54 3.90			7 49	
Moon I. U.		5.4	23 13 13.10	111°.82	62°.27	3 8 34.8	+886.9
	Moon I. L.	- -	23 35 38.67	112°.58	62°.52	S. 0° 9' 42.8"	900.6
λ Piscium -		5	23 34 51.18			N. 1° 0'	
	21 Piscium -	6	23 42 14.52			N. 0° 18'	
10	λ Piscium -	5	23 34 51.17			N. 1° 0'	
	21 Piscium -	6	23 42 14.51			0 18	
Moon I. U.		6.5	23 58 18.11	114°.14	63°.00	2 51 11.4	+907.2
	Moon I. L.	- -	0 21 21.34	116°.55	63°.70	5 52 37.3	905.8
35 Piscium *		6	0 7 43.32			8 2	
	d Piscium *	5½	0 13 20.85			N. 7° 24'	
11	35 Piscium *	6	0 7 43.31			N. 8° 2'	
	d Piscium *	5½	0 13 20.84			7 24	
Moon I. U.		7.5	0 44 58.81	119°.85	64°.64	8 52 54.9	+895.6
	Moon I. L.	- -	1 9 21.42	124°.08	65°.82	11 50 10.3	875.2
γ Piscium -		3½	1 23 57.10			14 37	
	101 Piscium *	6	1 28 14.98			N. 13° 56'	
12	γ Piscium -	3½	1 23 57.09			N. 14° 37'	
	101 Piscium *	6	1 28 14.97			13 56	
Moon I. U.		8.5	1 34 40.30	129°.23	67°.22	14 42 11.5	+842.9
	Moon I. L.	- -	2 1 6.40	135°.27	68°.82	17 26 24.3	+796.7
β Arietis -		2½	1 46 52.10			20 7	
	B.A.C. 607	6	1 51 47.37			N. 20° 22'	

MOON-CULMINATING STARS, 1859. 425

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of 's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of 's R.A. in 1 hour of Long.	Sidereal Time of 's Sem. per mer.	Declination.		
Jan. 13	β Arietis - -	2½	h m s	s	s	° ' "	"	
	B.A.C. 607-	6	1 46 52.08			N.20 7		
	Moon L.U.	9.6	1 51 47.36			20 22		
	Moon L.L.	- -	2 28 49.68	142.08	70.57	19 59 48.3	+ 734.4	
	δ Arietis - -	4½	2 57 58.34	149.45	72.43	22 18 57.2	653.8	
	ζ Arietis - -	4½	3 3 35.50			19 11		
	ζ Arietis - -	4½	3 6 49.31			N.20 31		
14	δ Arietis - -	4½	3 3 35.49			N.19 11		
	ζ Arietis - -	4½	3 6 49.30			20 31		
	Moon L.U.	10.6	3 28 37.15	157.03	74.28	24 19 59.5	+ 553.0	
	Moon L.L.	- -	4 0 45.90	164.33	76.03	25 58 47.6	431.4	
	27 Tauri - -	4	3 40 48.48			23 37		
	A' Tauri - -	4½	3 56 23.37			N.21 42		
15	27 Tauri - -	4	3 40 48.47			N.23 37		
	A' Tauri - -	4½	3 56 23.36			21 42		
	Moon L.U.	11.6	4 34 17.54	170.73	77.51	27 11 14.7	+ 289.8	
	Moon L.L.	- -	5 8 57.32	175.58	78.61	27 53 36.7	+ 131.3	
	π Tauri - -	6	5 10 50.37			21 57		
	β Tauri - -	2	5 17 24.88			N.28 29		
16	π Tauri - -	6	5 10 50.37			N.21 57		
	β Tauri - -	2	5 17 24.87			28 29		
	Moon L.U.	12.7	5 44 22.99	178.29	79.20	28 3 0.4	- 38.7	
	Moon L.L.	- -	6 20 6.78	178.57	79.22	27 37 52.1	212.6	
	κ Aurigæ -	4½	6 6 25.88			29 33		
	48 Aurigæ -	5½	6 19 32.54			N.30 34		
17	κ Aurigæ -	4½	6 6 25.88			N.29 33		
	48 Aurigæ -	5½	6 19 32.54			30 34		
	Moon L.U.	13.7	6 55 39.13	176.42	78.68	26 38 13.9	- 382.2	
	Moon L.L.	- -	7 30 32.76	172.21	77.68	25 5 45.9	539.7	
	ν Geminor.	4½	7 27 16.30			27 12		
	κ Geminor.	3½	7 35 58.24			N.24 44		
18	ν Geminor.	4½	7 27 16.31			N.27 12		
	κ Geminor.	3½	7 35 58.25			24 44		
	Moon II.U.	14.7	8 6 58.93	166.28	76.31	23 3 34.1	- 678.6	
	γ Cancri - -	6	8 24 35.30			20 55		
	γ Cancri - -	4½	8 35 9.62			N.21 58		
19	γ Cancri - -	6	8 24 35.32			N.20 55		
	γ Cancri - -	4½	8 35 9.64			21 58		
	Moon II.L.	- -	8 39 35.46	159.74	74.75	20 35 46.7	- 795.2	
	Moon II.U.	15.8	9 10 51.90	153.02	73.10	17 47 3.7	887.8	
	ν Leonis - *	5	9 50 40.08			13 7		
	γ Leonis - -	3½	9 59 40.51			N.17 27		
20	ν Leonis - *	5	9 50 40.10			N.13 7		
	γ Leonis - -	3½	9 59 40.53			17 27		
	Moon II.L.	- -	9 40 49.05	146.59	71.51	14 42 15.1	- 956.4	
	Moon II.U.	16.8	10 9 32.49	140.78	70.05	11 25 59.9	- 1002.5	
	45 Leonis - *	6	10 20 13.85			10 29		
	ρ Leonis - *	4	10 25 24.97			N.10 2		

426 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Jan. 21	45 Leonis - *	6	h m s 10 20 13.87	"	"	N. 10 29		
	p Leonis - *	4	10 25 24.99			10 2		
	Moon II. L.	-	10 37 10.97	135.78	68.78	8 2 35.3	- 1028.4	
	Moon II. U.	17.9	11 3 54.91	131.70	67.73	N. 4 35 50.7	1036.3	
	e Leonis - -	5	11 23 8.18			S. 2 14		
	v Leonis - -	4½	11 29 45.35			S. 0 3		
22	e Leonis - -	5	11 23 8.21			S. 2 14		
	v Leonis - -	4½	11 29 45.38			S. 0 3		
	Moon II. L.	-	11 29 55.50	128.56	66.91	N. 1 9 6.2	- 1028.7	
	Moon II. U.	18.9	11 55 23.97	126.34	66.34	S. 2 14 45.1	1007.8	
	η Virginis -	3½	12 12 42.90			N. 0 7		
	γ' Virginis -	2½	12 34 32.25			S. 0 41		
23	η Virginis -	3½	12 12 42.93			N. 0 7		
	γ' Virginis -	2½	12 34 32.28			S. 0 41		
	Moon II. L.	-	12 20 31.15	125.00	66.00	5 33 14.0	- 975.3	
	Moon II. U.	20.0	12 45 27.21	124.48	65.88	8 44 12.1	932.8	
	58 Virginis -	6	13 10 5.24			9 48		
	α Virginis -	1	13 17 47.06			S. 10 25		
24	58 Virginis -	6	13 10 5.27			S. 9 48		
	α Virginis -	1	13 17 47.10			10 25		
	Moon II. L.	-	13 10 21.50	124.69	65.95	11 45 45.5	- 881.4	
	Moon II. U.	21.0	13 35 22.30	125.55	66.20	14 36 12.4	821.8	
	89 Virginis -	5	13 42 13.87			17 26		
	B.A.C. 4700	5½	14 3 9.37			S. 15 38		
25	89 Virginis -	5	13 42 13.90			S. 17 26		
	B.A.C. 4700	5½	14 3 9.40			15 38		
	Moon II. L.	-	14 0 36.74	126.94	66.58	17 13 59.7	- 754.8	
	Moon II. U.	22.0	14 26 10.55	128.75	67.07	19 37 40.1	680.8	
	ι Libræ - -	4½	15 4 12.01			19 15		
	B.A.C. 5023	6	15 8 13.30			S. 21 52		
26	ι Libræ - -	4½	15 4 12.04			S. 19 15		
	B.A.C. 5023	6	15 8 13.34			21 52		
	Moon II. L.	-	14 52 7.79	130.82	67.61	21 45 51.0	- 600.0	
	Moon II. U.	23.1	15 18 30.67	132.99	68.18	23 37 14.7	513.0	
	κ Scorpil -	3	15 50 19.89			25 42		
	B.A.C. 5347	5	15 59 32.53			S. 25 57		
27	κ Scorpil -	3	15 50 19.93			S. 25 42		
	B.A.C. 5347	5	15 59 32.57			25 57		
	Moon II. L.	-	15 45 19.28	135.08	68.71	25 10 38.9	- 420.2	
	Moon II. U.	24.1	16 12 31.49	136.89	69.15	26 24 58.7	322.4	
	α Scorpil -	1½	16 20 46.14			26 7		
	τ Scorpil -	3½	16 27 6.76			S. 27 55		
28	α Scorpil -	1½	16 20 46.18			S. 26 7		
	τ Scorpil -	3½	16 27 6.79			27 55		
	Moon II. L.	-	16 40 2.92	138.25	69.48	27 19 20.5	- 220.7	
	Moon II. U.	25.1	17 7 47.19	139.01	69.64	27 53 4.9	116.4	
	A Ophiuchi -	5	17 6 40.85			S. 26 24		

MOON-CULMINATING STARS, 1859. 427

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Jan. 28	♄ Ophiuchi-	3½	h m s 17 13 21.09	"	"	S. 24 51 "	"	
29	A Ophiuchi-	5	17 6 40.88			S. 26 24		
	♄ Ophiuchi-	3½	17 13 21.12			24 51		
	Moon II. L.	-	17 35 36.41	139.07	69.62	28 5 49.6	- 11.0	
	Moon II. U.	26.2	18 3 21.80	138.37	69.40	S. 27 57 32.0	+ 93.7	
30	Moon II. L.	-	18 30 54.44	136.95	69.00	S. 27 28 31.3	+ 195.9	
	Moon II. U.	27.2	18 58 6.15	134.90	68.42	26 39 26.2	294.1	
31	Moon II. L.	-	19 24 50.01	132.34	67.72	S. 25 31 14.3	+ 386.9	
	Moon II. U.	28.2	19 51 1.01	129.45	66.92	24 5 7.5	473.0	
Feb. 1	Moon II. L.	-	20 16 36.10	126.39	66.08	S. 22 22 30.7	+ 551.8	
	Moon II. U.	29.3	20 41 34.43	123.34	65.24	20 24 54.3	622.8	
2	Moon I. L.	-	21 3 48.05	120.58	64.44	S. 18 13 54.8	+ 685.7	
3	Moon I. U.	0.5	21 27 38.91	117.96	63.72	S. 15 51 9.2	+ 740.5	
	Moon I. L.	-	21 51 0.53	115.72	63.11	13 18 14.2	787.3	
4	Moon I. U.	1.5	22 13 58.11	113.96	62.64	S. 10 36 45.9	+ 826.2	
	Moon I. L.	-	22 36 37.84	112.75	62.32	7 48 17.3	857.3	
5	Moon I. U.	2.5	22 59 6.57	112.14	62.18	S. 4 54 20.5	+ 880.9	
	Moon I. L.	-	23 21 31.87	112.19	62.23	S. 1 56 27.4	896.7	
6	Moon I. U.	3.6	23 44 1.83	112.93	62.48	N. 1 3 50.3	+ 904.9	
	Moon I. L.	-	0 6 45.09	114.41	62.94	4 4 57.9	905.0	
	♄ Piscium *	4	23 52 4.23			6 5		
	♄ Piscium *	6	23 55 17.40			N. 7 42		
7	♄ Piscium *	4	23 52 4.23			N. 6 5		
	♄ Piscium *	6	23 55 17.40			7 42		
	Moon I. U.	4.6	0 29 50.71	116.66	63.62	7 5 16.2	+ 896.6	
	Moon I. L.	-	0 53 28.11	119.71	64.51	10 2 58.4	878.9	
	♄ Piscium *	4½	0 41 22.25			6 49		
	♄ Piscium *	4	0 55 37.86			N. 7 8		
8	♄ Piscium *	4½	0 41 22.24			N. 6 49		
	♄ Piscium *	4	0 55 37.85			7 8		
	Moon I. U.	5.6	1 17 47.02	123.58	65.62	12 56 7.6	+ 850.9	
	Moon I. L.	-	1 42 57.19	128.25	66.91	15 42 33.6	811.4	
	107 Piscium -	5½	1 34 51.27			19 35		
	γ Arietis -	3½	1 45 48.27			N. 18 36		
9	107 Piscium -	5½	1 34 51.26			N. 19 35		
	γ Arietis -	3½	1 45 48.26			18 36		
	Moon I. U.	6.7	2 9 7.95	133.67	68.38	18 19 49.7	+ 759.0	
	Moon I. L.	-	2 36 27.73	139.73	69.99	20 45 11.9	692.1	
	♄ Arietis -	5½	2 30 49.59			21 21		
	μ Arietis -	5½	2 34 25.94			N. 19 25		
10	♄ Arietis -	5½	2 30 49.58			N. 21 21		
	μ Arietis -	5½	2 34 25.92			19 25		
	Moon I. U.	7.7	3 5 3.10	146.23	71.66	22 55 36.7	+ 609.2	
	Moon I. L.	-	3 34 57.61	152.86	73.33	N. 24 47 44.9	+ 509.2	

428 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.	
Feb. 10	11 Tauri - -	6	h m s			° ' "		
	7 Tauri - -	3	3 32 22.36			N. 24 52		
			3 39 7.56			23 40		
11	11 Tauri - -	6	3 32 22.34			N. 24 52		
	7 Tauri - -	3	3 39 7.54			23 40		
	Moon I. U.	8.7	4 6 10.64	159.23	74.89	26 18	8.5 + 391.8	
	Moon I. L.	- -	4 38 36.13	164.85	76.23	27 23	22.0 257.7	
	1 Tauri - -	4½	4 17 53.85			22 29		
	7 Tauri - -	4½	4 33 48.64			N. 22 41		
12	1 Tauri - -	4½	4 17 53.84			N. 22 29		
	7 Tauri - -	4½	4 33 48.62			22 41		
	Moon I. U.	9.8	5 12 1.85	169.18	77.24	28 0	19.0 + 109.6	
	Moon I. L.	- -	5 46 9.71	171.80	77.82	28 6	34.1 - 48.4	
	5 Geminor.	6	6 2 55.50			24 27		
	κ Aurigæ -	4½	6 6 25.74			N. 29 33		
13	5 Geminor.	6	6 2 55.49			N. 24 27		
	κ Aurigæ -	4½	6 6 25.73			29 33		
	Moon I. U.	10.8	6 20 37.36	172.45	77.93	27 40	40.0 - 210.8	
	Moon I. L.	- -	6 55 0.74	171.11	77.56	26 42	23.9 370.9	
	53 Geminor.	6	7 7 11.09			28 8		
	1 Geminor.	4	7 17 0.44			N. 28 4		
14	53 Geminor.	6	7 7 11.08			N. 28 8		
	1 Geminor.	4	7 17 0.43			28 4		
	Moon I. U.	11.8	7 28 57.10	168.02	76.79	25 12	52.0 - 522.4	
	Moon I. L.	- -	8 2 7.89	163.60	75.69	23 14	22.3 659.7	
	ψ Cancri -	4	8 1 59.92			25 56		
	λ Cancri -	6	8 12 11.33			N. 24 28		
15	ψ Cancri -	4	8 1 59.92			N. 25 56		
	λ Cancri -	6	8 12 11.33			24 28		
	Moon I. U.	12.9	8 34 20.28	158.38	74.39	20 50	10.5 - 778.8	
	Moon I. L.	- -	9 5 27.67	152.85	73.00	18 4	12.8 877.1	
	ε Cancri -	6	9 7 29.04			15 31		
	83 Cancri -	6	9 11 8.86			N. 18 18		
16	ε Cancri -	6	9 7 29.04			N. 15 31		
	83 Cancri -	6	9 11 8.87			18 18		
	Moon I. U.	13.9	9 35 29.07	147.44	71.63	15 0	45.2 - 953.7	
	γ Leonis - *	5	9 50 40.49			13 7		
	α Leonis - *	1½	10 0 53.99			N. 12 39		
17	γ Leonis - *	5	9 50 40.50			N. 13 7		
	α Leonis - *	1½	10 0 54.00			12 39		
	Moon II. L.	- -	10 6 48.69	142.27	70.36	11 44	9.1 - 1008.7	
	Moon II. U.	15.0	10 34 49.44	137.98	69.26	8 18	38.7 1043.1	
	σ Leonis - *	4	11 13 54.15			6 48		
	τ Leonis - -	5	11 20 43.34			N. 3 38		
18	σ Leonis - *	4	11 13 54.16			N. 6 48		
	τ Leonis - -	5	11 20 43.36			3 38		
	Moon II. L.	- -	11 2 3.36	134.47	68.35	N. 4 48	12.2 - 1058.2	

MOON-CULMINATING STARS, 1859. 429

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
			h m s			° ' "	
Feb. 18	Moon II. U.	16.0	11 28 39.99	131.78	67.65	N. 1 16 30.7	-1055.9
	10 Virginis -	6	12 2 29.88			2 41	
	γ Virginis -	3½	12 12 43.58			N. 0 7	
19	10 Virginis -	6	12 2 29.90			N. 2 41	
	γ Virginis -	3½	12 12 43.60			N. 0 7	
	Moon II. L.	- -	11 54 49.35	129.92	67.18	S. 2 13 7.8	-1038.0
	Moon II. U.	17.0	12 20 41.20	128.85	66.92	5 37 45.5	1006.1
	ψ Virginis -	5	12 47 3.34			8 46	
	50 Virginis -	6	13 2 24.66			S. 9 35	
20	ψ Virginis -	5	12 47 3.36			S. 8 46	
	50 Virginis -	6	13 2 24.68			9 35	
	Moon II. L.	- -	12 46 24.80	128.53	66.86	8 54 45.1	- 961.9
	Moon II. U.	18.1	13 12 8.57	128.87	66.98	12 1 46.9	906.7
	83 Virginis -	6	13 36 55.49			15 28	
	89 Virginis -	5	13 42 14.70			S. 17 26	
21	83 Virginis -	6	13 36 55.52			S. 15 28	
	89 Virginis -	5	13 42 14.73			17 26	
	Moon II. L.	- -	13 37 59.91	129.78	67.25	14 56 46.2	- 841.7
	Moon II. U.	19.1	14 4 4.97	131.13	67.64	17 37 52.2	768.0
	B.A.C. 4896	6	14 43 43.40			17 12	
	B.A.C. 4923	6	14 49 15.50			S. 20 47	
22	B.A.C. 4896	6	14 43 43.43			S. 17 12	
	B.A.C. 4923	6	14 49 15.53			20 47	
	Moon II. L.	- -	14 30 28.32	132.80	68.11	20 3 25.8	- 686.4
	Moon II. U.	20.2	14 57 12.81	134.63	68.62	22 11 57.9	597.9
	39 Libræ - -	4½	15 28 29.74			27 40	
	δ Scorpïi - -	5	15 42 31.55			S. 25 19	
23	39 Libræ - -	4½	15 28 29.77			S. 27 40	
	δ Scorpïi - -	5	15 42 31.59			25 19	
	Moon II. L.	- -	15 24 19.36	136.44	69.11	24 2 10.3	- 503.3
	Moon II. U.	21.2	15 51 46.67	138.06	69.55	25 32 56.8	403.7
	α Scorpïi - -	1½	16 20 47.09			26 7	
	τ Scorpïi - -	3½	16 27 7.72			S. 27 55	
24	α Scorpïi - -	1½	16 20 47.13			S. 26 7	
	τ Scorpïi - -	3½	16 27 7.76			27 55	
	Moon II. L.	- -	16 19 31.40	139.32	69.88	26 43 22.8	- 300.1
	Moon II. U.	22.2	16 47 28.21	140.05	70.07	27 32 49.1	194.0
	θ Ophiuchi -	3½	17 13 21.99			24 51	
	δ Ophiuchi -	4	17 18 22.00			S. 29 44	
25	θ Ophiuchi -	3½	17 13 22.02			S. 24 51	
	δ Ophiuchi -	4	17 18 22.04			29 44	
	Moon II. L.	- -	17 15 30.22	140.17	70.09	28 0 54.1	- 86.8
	Moon II. U.	23.3	17 43 29.49	139.59	69.93	28 7 34.0	+ 19.9
	γ Sagittarii	3½	17 56 46.01			30 25	
	δ Sagittarii	3½	18 11 58.67			S. 29 53	
26	γ Sagittarii	3½	17 56 46.05			S. 30 25	

430 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					
			Apparent Right Ascension in Time.	Var. of (C's R.A. in 1 hour of Long.	Sidereal Time of (C's Sem. pas. mer.	Declination.	Var. of (C's Dec. in 1 hour of Long.	
			^h ^m ^s	"	"	[°] ' "	"	
Feb. 26	♂ Sagittarii	3½	18 11 58.71			S. 29 53		
	Moon II.L.	-	18 11 17.74	138.33	69.58	-27 53 4.1	+124.6	
	Moon II.U.	24.3	18 38 47.18	136.48	69.06	27 17 57.9	225.7	
	ζ Sagittarii	3½	18 53 38.74			30 5		
	τ Sagittarii	3½	18 58 8.55			S. 27 52		
27	ζ Sagittarii	3½	18 53 38.78			S. 30 5		
	τ Sagittarii	3½	18 58 8.59			27 52		
	Moon II.L.	-	19 5 51.09	134.10	68.40	26 23 5.5	+322.1	
	Moon II.U.	25.3	19 32 24.20	131.37	67.64	25 9 31.1	412.6	
	ω Sagittarii	5	19 47 12.19			26 40		
A Sagittarii	5	19 50 21.67			S. 26 34			
	28	Moon II.L.	-	19 58 23.17	128.44	66.82	S. 23 38 29.8	+496.5
	Moon II.U.	26.4	20 23 46.56	125.47	65.98	21 51 23.3	573.3	
Mar. 1	Moon II.L.	-	20 48 34.83	122.60	65.16	S. 19 49 40.0	+642.7	
	Moon II.U.	27.4	21 12 50.00	119.98	64.40	17 34 49.8	704.4	
2	Moon II.L.	-	21 36 35.53	117.68	63.73	S. 15 8 24.1	+758.6	
	Moon II.U.	28.4	21 59 56.04	115.82	63.18	12 31 55.4	804.9	
3	Moon II.L.	-	22 22 57.13	114.45	62.78	S. 9 46 57.1	+843.5	
	Moon II.U.	29.5	22 45 45.06	113.63	62.53	6 55 2.4	874.3	
4	Moon I.L.	-	23 6 21.80	113.41	62.47	S. 3 57 46.8	+897.0	
5	Moon I.U.	0.7	23 29 4.41	113.80	62.59	S. 0 56 48.2	+911.4	
	Moon I.L.	-	23 51 55.64	114.85	62.90	N. 2 6 11.9	917.1	
6	Moon I.U.	1.8	0 15 3.67	116.60	63.42	N. 5 9 26.5	+913.7	
	Moon I.L.	-	0 38 36.97	119.07	64.14	8 11 2.0	900.5	
7	Moon I.U.	2.8	1 2 44.18	122.26	65.06	N. 11 8 56.6	+876.7	
	Moon I.L.	-	1 27 33.96	126.16	66.15	14 0 57.7	841.5	
8	Moon I.U.	3.8	1 53 14.57	130.72	67.41	N. 16 44 41.9	+793.7	
	Moon I.L.	-	2 19 53.51	135.86	68.81	19 17 33.1	732.4	
	ρ Piscium -	5	1 18 39.45			18 26		
η Piscium -	3½	1 23 56.51			N. 14 37			
	9	ρ Piscium -	5	1 18 39.45		N. 18 26		
	η Piscium -	3½	1 23 56.50			14 37		
Moon I.U.	4.9	2 47 36.83	141.42	70.29	21 36 42.8	+656.7		
	Moon I.L.	-	3 16 28.28	147.17	71.79	23 39 12.7	565.7	
	ζ Arietis -	4½	3 6 48.54			20 31		
	τ Arietis -	5	3 13 5.96			N. 20 38		
	10	ζ Arietis -	4½	3 6 48.53			N. 20 31	
τ Arietis -	5	3 13 5.94			20 38			
	Moon I.U.	5.9	3 46 28.43	152.81	73.23	25 21 58.7	+459.4	
	Moon I.L.	-	4 17 33.64	157.95	74.52	26 41 59.8	+338.4	
	α Tauri -	5½	4 14 1.30			25 18		
	ν Tauri -	4½	4 17 53.40			N. 22 29		
11	α Tauri -	5½	4 14 1.28			N. 25 18		

MOON-CULMINATING STARS, 1859. 43

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Mar. 11	♂ Tauri - -	4½	h m s			N. 22 29		
	Moon I. U.	6·9	4 17 53·39			27 36 29·4	+ 204·	
	Moon I. L.	- -	4 49 35·52	162·18	75·56	28 3 8·0	+ 60·	
	β Tauri - -	2	5 22 20·83	165·12	76·26	28 29		
	χ Aurigæ - -	5	5 17 24·18			N. 32 5		
			5 23 34·21					
	12 β Tauri - -	2	5 17 24·16			N. 28 29		
	χ Aurigæ - -	5	5 23 34·19			32 5		
	Moon I. U.	8·0	5 55 32·31	166·50	76·58	28 0 19·3	- 89·	
	Moon I. L.	- -	6 28 50·41	166·23	76·49	27 27 21·0	240·	
	η Geminor.	3½	6 6 23·59			22 33		
	μ Geminor.	3	6 14 27·47			N. 22 35		
	13 η Geminor.	3½	6 6 23·57			N. 22 33		
	μ Geminor.	3	6 14 27·45			22 35		
	Moon I. U.	9·0	7 1 55·51	164·38	76·02	26 24 30·3	- 387·	
	Moon I. L.	- -	7 34 30·23	161·22	75·22	24 53 4·3	525·	
	ν Geminor.	4½	7 27 16·06			27 12		
	κ Geminor.	3½	7 35 58·05			N. 24 44		
	14 ν Geminor.	4½	7 27 16·04			N. 27 12		
	κ Geminor.	3½	7 35 58·04			24 44		
	Moon I. U.	10·1	8 6 21·10	157·14	74·19	22 55 11·8	- 651·	
	Moon I. L.	- -	8 37 19·61	152·56	73·02	20 33 42·3	761·	
	40 Cancri - -	6	8 32 7·01			20 28		
	δ Cancri - -	4	8 36 42·45			N. 18 40		
	15 40 Cancri - -	6	8 32 7·00			N. 20 28		
	δ Cancri - -	4	8 36 42·44			18 40		
	Moon I. U.	11·1	9 7 22·10	147·87	71·81	17 51 52·5	- 854·	
	Moon I. L.	- -	9 36 29·34	143·40	70·64	14 53 16·5	928·	
	B.A.C. 3345*	6	9 40 0·92			12 5		
	ν Leonis - *	5	9 50 40·53			N. 13 7		
	16 B.A.C. 3345*	6	9 40 0·91			N. 12 5		
	ν Leonis - *	5	9 50 40·53			13 7		
	Moon I. U.	12·1	10 4 45·38	139·38	69·58	11 41 32·8	- 985·	
	Moon I. L.	- -	10 32 16·84	135·98	68·67	8 20 21·0	1023·	
	45 Leonis - *	6	10 20 14·42			10 29		
	ρ Leonis - *	4	10 25 25·56			N. 10 2		
	17 45 Leonis - *	6	10 20 14·42			N. 10 29		
	ρ Leonis - *	4	10 25 25·56			10 2		
	Moon I. U.	13·2	10 59 11·76	133·30	67·95	4 53 13·9	- 1044·	
	Moon I. L.	- -	11 25 39·10	131·38	67·44	N. 1 23 36·4	1048·	
	ν Leonis - -	4½	11 29 46·24			S. 0 3		
	β Virginis - -	3½	11 43 23·55			N. 2 34		
	18 ν Leonis - -	4½	11 29 46·24			S. 0 3		
	β Virginis - -	3½	11 43 23·56			N. 2 34		
	Moon I. U.	14·2	11 54 2·22	130·19	67·13	S. 2 5 17·4	- 1037·	
	γ Virginis - -	6	12 26 32·65			8 40		
	χ Virginis - -	5	12 32 0·96			S. 7 13		

432 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Mar. 19	γ Virginis -	6	^h ^m ^s 12 26 32.66	"	"	S. 8 40	"	"
	x Virginis -	5	12 32 0.97			7 13		
	Moon II.L.	- -	12 20 1.45	129.80	67.03	5 30 24.2	- 1011.3	
	Moon II.U.	15.2	12 46 0.12	130.09	67.11	8 48 54.2	971.5	
	α Virginis -	1	13 17 48.41			10 25		
	75 Virginis -	6	13 25 22.27			S. 14 38		
	α Virginis -	1	13 17 48.43			S. 10 25		
	75 Virginis -	6	13 25 22.28			14 38		
	Moon II.L.	- -	13 12 5.92	130.97	67.36	11 58 8.1	- 918.9	
	Moon II.U.	16.3	13 38 25.32	132.34	67.75	14 55 40.0	854.6	
20	B.A.C. 4700	5½	14 3 10.89			15 38		
	B.A.C. 4722	6	14 7 40.78			S. 17 32		
	B.A.C. 4700	5½	14 3 10.91			S. 15 38		
	B.A.C. 4722	6	14 7 40.80			17 32		
	Moon II.L.	- -	14 5 3.49	134.07	68.23	17 39 15.9	- 779.7	
	Moon II.U.	17.3	14 32 3.83	136.01	68.77	20 6 55.1	695.3	
	20 Libræ - -	3½	14 55 51.79			24 44		
	1 Libræ - -	4½	15 4 13.71			S. 19 15		
	20 Libræ - -	3½	14 55 51.82			S. 24 44		
	1 Libræ - -	4½	15 4 13.74			19 15		
22	Moon II. L.	- -	14 59 27.81	137.98	69.32	22 16 50.3	- 602.6	
	Moon II. U.	18.3	15 27 14.66	139.79	69.83	24 7 30.2	503.0	
	ρ Scorpil -	4½	15 48 13.27			28 48		
	δ Scorpil -	2½	15 52 2.18			S. 22 13		
	ρ Scorpil -	4½	15 48 13.30			S. 28 48		
	δ Scorpil -	2½	15 52 2.21			22 13		
	Moon II. L.	- -	15 55 21.37	141.25	70.24	25 37 39.9	- 397.9	
	Moon II. U.	19.4	16 23 42.72	142.20	70.52	26 46 24.6	289.1	
	A Ophiuchi	5	17 6 42.70			26 24		
	θ Ophiuchi -	3½	17 13 22.90			S. 24 51		
24	A Ophiuchi -	5	17 6 42.73			S. 26 24		
	θ Ophiuchi	3½	17 13 22.94			24 51		
	Moon II. L.	- -	16 52 11.70	142.50	70.63	27 33 10.2	- 178.3	
	Moon II. U.	20.4	17 20 40.00	142.08	70.54	27 57 44.6	67.6	
	3 Sagittarii	5	17 38 42.75			27 46		
	B.A.C. 6074	5	17 50 3.61			S. 30 14		
	3 Sagittarii	5	17 38 42.78			S. 27 46		
	B.A.C. 6074	5	17 50 3.64			30 14		
	Moon II. L.	- -	17 48 58.76	140.92	70.26	28 0 19.1	+ 41.4	
	Moon II. U.	21.5	18 16 59.39	139.08	69.79	27 41 25.0	146.9	
25	ρ Sagittarii	3½	18 36 52.28			27 8		
	σ Sagittarii	2½	18 46 32.76			S. 26 28		
	ρ Sagittarii	3½	18 36 52.31			S. 27 8		
	σ Sagittarii	2½	18 46 32.80			26 28		
	Moon II. L.	- -	18 44 34.36	136.66	69.17	27 1 52.3	+ 247.6	
	Moon II. U.	22.5	19 11 37.65	133.83	68.41	26 2 45.7	+ 342.4	
	h Sagittarii	4½	19 28 8.47			S. 25 11		
	ρ Sagittarii	3½	18 36 52.28			27 8		
	σ Sagittarii	2½	18 46 32.76			S. 26 28		
	ρ Sagittarii	3½	18 36 52.31			S. 27 8		
26	σ Sagittarii	2½	18 46 32.80			26 28		
	Moon II. L.	- -	18 44 34.36	136.66	69.17	27 1 52.3	+ 247.6	
	Moon II. U.	22.5	19 11 37.65	133.83	68.41	26 2 45.7	+ 342.4	
	h Sagittarii	4½	19 28 8.47			S. 25 11		
	ρ Sagittarii	3½	18 36 52.28			27 8		
	σ Sagittarii	2½	18 46 32.76			S. 26 28		
	ρ Sagittarii	3½	18 36 52.31			S. 27 8		
	σ Sagittarii	2½	18 46 32.80			26 28		
	Moon II. L.	- -	18 44 34.36	136.66	69.17	27 1 52.3	+ 247.6	
	Moon II. U.	22.5	19 11 37.65	133.83	68.41	26 2 45.7	+ 342.4	

MOON-CULMINATING STARS, 1859. 433

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Mar. 26	♐ Sagittarii	5	h m s 19 47 12.59	"	"	S. 26 40	"	
27	♐ Sagittarii	4½	19 28 8.51			S. 25 11		
	♐ Sagittarii	5	19 47 13.03			26 40		
	Moon II.L.	-	19 38 5.28	130° 75	67° 58	24 45 20.6	+430.6	
	Moon II.U.	23.5	20 3 55.33	127° 59	66° 71	23 10 59.1	511.8	
	♑ Capricorni	5	20 20 49.61			18 17		
	♑ Capricorni	4½	20 37 45.34			S. 25 46		
28	♑ Capricorni	5	20 20 49.63			S. 18 17		
	♑ Capricorni	4½	20 37 45.37			25 46		
	Moon II.L.	-	20 29 7.81	124° 52	65° 85	21 21 6.8	+585.7	
	Moon II.U.	24.6	20 53 44.62	121° 67	65° 03	19 17 10.3	652.5	
	♑ Capricorni	4½	21 14 24.09			17 26		
	♑ Capricorni	3½	21 32 17.06			S. 17 18		
29	♑ Capricorni	4½	21 14 24.12			S. 17 26		
	♑ Capricorni	3½	21 32 17.08			17 18		
	Moon II.L.	-	21 17 49.16	119° 15	64° 30	17 0 35.6	+712.1	
	Moon II.U.	25.6	21 41 26.04	117° 07	63° 67	14 32 48.2	764.6	
	♒ Aquarii	4	21 58 49.51			14 33		
	♒ Aquarii	4½	22 9 23.81			S. 8 29		
30	Moon II.L.	-	22 4 40.85	115° 49	63° 19	S. 11 55 12.6	+810.1	
	Moon II.U.	26.6	22 27 40.02	114° 47	62° 86	9 9 13.5	848.5	
31	Moon II.L.	-	22 50 30.53	114° 05	62° 71	S. 6 16 18.0	+879.5	
	Moon II.U.	27.7	23 13 19.84	114° 28	62° 74	3 17 56.0	902.8	
Apr. 1	Moon II.L.	-	23 36 15.88	115° 18	62° 96	S. 0 15 43.2	+917.9	
	Moon II.U.	28.7	23 59 26.85	116° 77	63° 39	N. 2 48 38.4	924.1	
2	Moon II.L.	-	0 23 1.25	119° 08	64° 02	N. 5 53 15.8	+920.4	
	Moon II.U.	0.1	0 47 7.71	122° 12	64° 85	8 56 5.9	906.0	
3	Moon I.L.	-	1 9 43.07	125° 67	65° 86	N. 11 54 52.8	+879.7	
4	Moon I.U.	1.1	1 35 16.66	130° 04	67° 05	N. 14 47 6.8	+840.3	
	Moon I.L.	-	2 1 46.32	135° 00	68° 39	17 30 3.1	786.6	
5	Moon I.U.	2.1	2 29 18.23	140° 39	69° 81	N. 20 0 44.7	+717.7	
	Moon I.L.	-	2 57 56.41	146° 00	71° 28	22 16 4.4	632.8	
6	Moon I.U.	3.2	3 27 41.82	151° 53	72° 69	N. 24 12 48.6	+531.9	
	Moon I.L.	-	3 58 31.38	156° 62	73° 99	25 47 48.6	415.6	
7	♉ Tauri - -	5	4 11 41.66			N. 27 1		
	♉ Tauri - -	4½	4 17 53.00			22 29		
	Moon I.U.	4.2	4 30 17.36	160° 86	75° 05	26 58 10.5	+285.9	
	Moon I.L.	-	5 2 47.24	163° 88	75° 81	27 41 29.3	+145.7	
	♉ Tauri - -	2	5 17 23.72			28 29		
	♉ Aurigæ -	5	5 23 33.72			N. 32 5		
8	♉ Tauri - -	2	5 17 23.71			N. 28 29		
	♉ Aurigæ -	5	5 23 33.70			32 5		
	Moon I.U.	5.2	5 35 44.37	165° 37	76° 19	27 56 2.7	- 0.9	
	Moon I.L.	-	6 8 49.54	165° 21	76° 16	N. 27 41 1.3	-149.2	

34 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Apr. 8	κ Aurigæ -	4½	h m s 6 6 24·81	"	"	N. 29 33	"	"
	μ Geminor.	3	6 14 27·00			22 35		
9	κ Aurigæ -	4½	6 6 24·79			N. 29 33		
	μ Geminor.	3	6 14 26·98			22 35		
	Moon I. U.	6·3	6 41 43·19	163·48	75·75	26 56 34·5	-	294·3
	Moon I. L.	- -	7 14 7·61	160·40	75·00	25 43 48·9	-	431·6
	ι Geminor.	4	7 16 59·64			28 4		
	υ Geminor.	4½	7 27 15·60			N. 27 12		
10	ι Geminor.	4	7 16 59·62			N. 28 4		
	υ Geminor.	4½	7 27 15·58			27 12		
	Moon I. U.	7·3	7 45 48·80	156·34	74·00	24 4 39·8	-	557·7
	Moon I. L.	- -	8 16 37·54	151·73	72·84	22 1 39·6	-	669·8
	γ Cancri -	6	8 24 34·95			20 55		
	δ Cancri -	4	8 36 42·09			N. 18 40		
11	γ Cancri -	6	8 24 34·94			N. 20 55		
	δ Cancri -	4	8 36 42·08			18 40		
	Moon I. U.	8·4	8 46 29·45	146·94	71·62	19 37 45·0	-	766·6
	Moon I. L.	- -	9 15 24·66	142·32	70·42	16 56 5·0	-	847·4
	83 Cancri -	6	9 11 8·50			18 18		
	λ Leonis -	4½	9 23 42·54			N. 23 35		
12	83 Cancri -	6	9 11 8·48			N. 18 18		
	λ Leonis -	4½	9 23 42·53			23 35		
	Moon I. U.	9·4	9 43 26·74	138·12	69·31	13 59 52·8	-	912·0
	Moon I. L.	- -	10 10 41·96	134·53	68·35	10 52 20·2	-	960·9
	ν Leonis -	5	9 50 40·30			13 7		
	α Leonis -	1½	10 0 53·85			N. 12 39		
13	ν Leonis -	5	9 50 40·28			N. 13 7		
	α Leonis -	1½	10 0 53·84			12 39		
	Moon I. U.	10·5	10 37 18·25	131·65	67·55	7 36 33·1	-	994·4
	Moon I. L.	- -	11 3 24·53	129·53	66·96	4 15 32·7	-	1013·2
	ε Leonis -	5	10 53 28·63			6 51		
	ε Leonis -	4	11 13 54·36			N. 6 48		
14	ε Leonis -	5	10 53 28·62			N. 6 51		
	ε Leonis -	4	11 13 54·35			6 48		
	Moon I. U.	11·5	11 29 10·15	128·21	66·58	N. 0 52 13·0	-	1017·7
	Moon I. L.	- -	11 54 44·57	127·66	66·41	S. 2 30 37·5	-	1008·4
	B.A.C. 4006	6	11 43 52·48			S. 4 33		
	η Virginis -	3½	12 12 44·08			N. 0 7		
15	B.A.C. 4006	6	11 43 52·47			S. 4 33		
	η Virginis -	3½	12 12 44·08			N. 0 7		
	Moon I. U.	12·5	12 20 16·85	127·84	66·45	S. 5 50 15·5	-	985·7
	Moon I. L.	- -	12 45 55·48	128·70	66·67	9 4 2·5	-	950·0
	↓ Virginis -	5	12 47 4·02			8 46		
	g Virginis -	6	13 0 33·41			S. 9 59		
16	↓ Virginis -	5	12 47 4·02			S. 8 46		
	g Virginis -	6	13 0 33·41			S. 9 59		

MOON-CULMINATING STARS, 1859. 435

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Apr. 16	Moon I. v.	13.6	^h 13 ^m 11 ^s 48.11	130.16	67.04	S. 12 9 24.6	-901.7	
	Moon I. L.	-	13 38 1.13	132.08	67.55	15 3 53.9	841.2	
	69 Virginis -	5½	13 19 58.77			15 15		
	73 Virginis -	6	13 24 29.66			S. 18 0		
17	69 Virginis -	5½	13 19 58.78			S. 15 15		
	73 Virginis -	6	13 24 29.67			18 0		
	Moon II. v.	14.6	14 6 55.79	134.45	68.16	17 45 8.3	-769.3	
	B.A.C. 4896	6	14 43 44.66			17 12		
18	B.A.C. 4923	6	14 49 16.81			S. 20 47		
	B.A.C. 4896	6	14 43 44.68			S. 17 12		
	B.A.C. 4923	6	14 49 16.83			20 47		
	Moon II. L.	-	14 34 3.77	136.89	68.80	20 10 55.0	-686.7	
	Moon II. v.	15.6	15 1 40.90	139.28	69.45	22 19 11.6	594.6	
	♂ Scorpii -	5	15 42 33.12			25 19		
	♀ Scorpii -	4½	15 48 13.98			S. 28 48		
	19	♂ Scorpii -	5	15 42 33.14			S. 25 19	
♀ Scorpii -		4½	15 48 14.01			28 48		
Moon II. L.		-	15 29 45.35	141.40	70.02	24 8 12.2	-494.3	
Moon II. v.		16.7	15 58 12.75	143.07	70.48	25 36 28.3	387.5	
	♂ Scorpii -	3½	16 12 40.22			25 15		
	♂ Scorpii -	1½	16 20 48.79			S. 26 7		
	20	♂ Scorpii -	3½	16 12 40.24			S. 25 15	
		♂ Scorpii -	1½	16 20 48.81			26 7	
Moon II. L.		-	16 26 56.31	144.07	70.78	26 42 55.1	-276.4	
Moon II. v.		17.7	16 55 47.26	144.28	70.87	27 26 53.5	163.2	
	♂ Ophiuchi -	3½	17 13 23.77			24 51		
	♂ Ophiuchi -	4	17 18 23.88			S. 29 44		
	21	♂ Ophiuchi -	3½	17 13 23.80			S. 24 51	
		♂ Ophiuchi -	4	17 18 23.91			29 44	
Moon II. L.		-	17 24 35.60	143.63	70.74	27 48 11.8	-50.1	
Moon II. v.		18.7	17 53 11.08	142.14	70.40	27 47 6.0	+60.5	
	♂ Sagittarii	3½	18 12 0.58			29 53		
	♂ Sagittarii	3	18 19 18.57			S. 25 30		
	22	♂ Sagittarii	3½	18 12 0.61			S. 29 53	
		♂ Sagittarii	3	18 19 18.60			25 30	
Moon II. L.		-	18 21 24.03	139.90	69.86	27 24 17.3	+166.7	
Moon II. v.		19.8	18 49 6.31	137.06	69.15	26 40 47.3	267.1	
	♂ Sagittarii	3½	18 58 10.40			27 52		
	B.A.C. 6755	5½	19 37 3.40			S. 32 15		
	23	♂ Sagittarii	3½	18 58 10.44			S. 27 52	
		B.A.C. 6755	5½	19 37 3.44			32 15	
Moon II. L.		-	19 16 11.85	133.81	68.32	25 37 53.6	+360.6	
Moon II. v.		20.8	19 42 36.99	130.36	67.42	24 17 2.7	+446.6	
	♂ Capricorni	5½	20 11 17.07			19 33		
	♀ Capricorni	5	20 20 50.44			S. 18 17		
24	♂ Capricorni	5½	20 11 17.10			S. 19 33		

436 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Apr. 24	Capricorni	5	^h 20 ^m 20 ^s 50.47			S. 18° 17'		
	Moon II.L.	- -	20 8 20.41	126.89	66.50	22 39 47.0	+524.8	
	Moon II.U.	21.8	20 33 23.05	123.59	65.60	20 47 39.2	595.3	
	21 Capricorni	6	20 52 56.98			18 5		
	θ Capricorni	4	20 58 2.57			S. 17 47		
	25 21 Capricorni	6	20 52 57.01			S. 18 5		
	θ Capricorni	4	20 58 2.60			17 47		
	Moon II.L.	- -	20 57 47.72	120.59	64.77	18 42 9.7	+658.4	
	Moon II.U.	22.9	21 21 38.80	118.00	64.04	16 24 45.4	714.5	
	γ Capricorni	3½	21 32 17.83			17 18		
	δ Capricorni	3	21 39 16.53			S. 16 46		
	26 γ Capricorni	3½	21 32 17.86			S. 17 18		
	δ Capricorni	3	21 39 16.56			16 46		
	Moon II.L.	- -	21 45 1.83	115.93	63.43	13 56 49.4	+763.8	
Moon II.U.	23.9	22 8 3.35	114.43	62.98	11 19 41.0	806.5		
Apr. 25	67 Aquarii -	6	22 35 53.22			7 42		
	λ Aquarii -	4	22 45 16.18			S. 8 20		
	27 67 Aquarii -	6	22 35 53.25			S. 7 42		
	λ Aquarii -	4	22 45 16.21			8 20		
	Moon II.L.	- -	22 30 50.61	113.56	62.70	8 34 38.3	+842.9	
	Moon II.U.	24.9	22 53 31.41	113.36	62.61	5 42 58.8	872.6	
	96 Aquarii -	5½	23 12 5.99			S. 5 53		
	κ Piscium -	4½	23 19 42.92			N. 0 29		
	28 96 Aquarii -	5½	23 12 6.01			S. 5 53		
	κ Piscium -	4½	23 19 42.95			N. 0 29		
	Moon II.L.	- -	23 16 14.06	113.87	62.72	S. 2 46 3.8	+895.4	
	Moon II.U.	26.0	23 39 7.21	115.12	63.03	N. 0 14 41.0	910.7	
	29 Moon II.L.	- -	0 2 19.95	117.13	63.56	N. 3 17 40.5	+917.7	
	Moon II.U.	27.0	0 26 1.57	119.93	64.30	6 21 8.2	915.3	
30	Moon II.L.	- -	0 50 21.49	123.53	65.25	N. 9 23 3.9	+902.1	
	Moon II.U.	28.0	1 15 29.17	127.88	66.40	12 21 8.1	876.5	
May 1	Moon II.L.	- -	1 41 33.46	132.95	67.74	N. 15 12 43.6	+837.0	
	Moon II.U.	29.1	2 8 42.38	138.62	69.20	17 54 52.7	781.8	
2	Moon II.L.	- -	2 37 1.96	144.70	70.75	N. 20 24 18.6	+709.5	
3	Moon I. U.	0.6	3 4 10.93	150.64	72.32	N. 22 37 29.9	+619.3	
	Moon I. L.	- -	3 34 54.86	156.60	73.80	24 30 50.0	511.0	
4	Moon I. U.	1.6	4 6 46.66	161.87	75.10	N. 26 0 47.2	+385.8	
	Moon I. L.	- -	4 39 35.07	165.95	76.10	27 4 13.7	246.5	
5	Moon I. U.	2.7	5 13 3.30	168.44	76.72	N. 27 38 42.7	+ 97.1	
	Moon I. L.	- -	5 46 50.42	169.08	76.90	27 42 45.2	- 56.9	
6	136 Tauri - -	5	5 44 28.73			N. 27 34		
	139 Tauri - -	5½	5 49 15.64			25 56		
	Moon I. U.	3.7	6 20 33.64	167.81	76.62	27 16 1.0	-209.7	
	Moon I. L.	- -	6 53 51.14	164.84	75.94	N. 26 19 19.8	-355.5	

MOON-CULMINATING STARS, 1859. 437

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
May 6	♊ Geminor.	3½	h m s 7 11 43.15	"	"	N.22 14	"	
	♊ Geminor.	4	7 16 59.23			28 4		
7	♊ Geminor.	3½	7 11 43.14			N.22 14		
	♊ Geminor.	4	7 16 59.22			28 4		
	Moon L. U.	4.8	7 26 24.67	160.56	74.92	24 54 34.8	-489.7	
	Moon L. L.	- -	7 58 1.26	155.44	73.69	23 4 25.6	609.1	
	♊ Cancri - -	6	7 52 25.21			25 46		
	♊ Cancri - -	4	8 1 58.84			N.25 56		
8	♊ Cancri - -	6	7 52 25.20			N.25 46		
	♊ Cancri - -	4	8 1 58.83			25 56		
	Moon L. U.	5.8	8 28 33.75	149.96	72.34	20 52 1.8	-711.9	
	Moon L. L.	- -	8 58 0.44	144.53	70.98	18 20 48.5	797.5	
	♊ Cancri - -	4	8 36 41.69			18 40		
	83 Cancri - -	6	9 11 8.12			N.18 18		
9	♊ Cancri - -	4	8 36 41.68			N.18 40		
	83 Cancri - -	6	9 11 8.11			18 18		
	Moon L. U.	6.8	9 26 24.05	139.49	69.68	15 34 9.9	-866.2	
	Moon L. L.	- -	9 53 50.60	135.05	68.52	12 35 24.0	918.8	
	♊ Leonis - *	5	9 50 39.96			13 7		
	♊ Leonis - *	1½	10 0 53.52			N.12 39		
10	♊ Leonis - *	5	9 50 39.95			N.13 7		
	♊ Leonis - *	1½	10 0 53.51			12 39		
	Moon L. U.	7.9	10 20 28.31	131.37	67.53	9 27 38.0	-956.4	
	Moon L. L.	- -	10 46 26.65	128.50	66.75	6 13 45.7	980.0	
	♊ Leonis - *	5	10 53 28.39			6 51		
	♊ Leonis - *	5	10 57 46.71			N. 8 6		
11	♊ Leonis - *	5	10 53 28.38			N. 6 51		
	♊ Leonis - *	5	10 57 46.70			8 6		
	Moon L. U.	8.9	11 11 55.72	126.49	66.19	N. 2 56 30.2	-990.4	
	Moon L. L.	- -	11 37 5.75	125.32	65.85	S. 0 21 35.2	988.5	
	♊ Leonis - -	5	11 23 8.82			2 14		
	♊ Leonis - -	4½	11 29 46.06			S. 0 3		
12	♊ Leonis - -	5	11 23 8.81			S. 2 14		
	♊ Leonis - -	4½	11 29 46.05			0 3		
	Moon L. U.	9.9	12 2 6.73	124.98	65.73	3 38 5.2	-974.6	
	Moon L. L.	- -	12 27 8.27	125.40	65.82	6 50 39.3	949.2	
	♊ Virginis -	6	12 29 34.32			5 3		
	28 Virginis -	6	12 34 42.99			S. 6 43		
13	♊ Virginis -	6	12 29 34.31			S. 5 3		
	28 Virginis -	6	12 34 42.99			6 43		
	Moon L. U.	11.0	12 52 19.23	126.53	66.10	9 57 0.3	-912.4	
	Moon L. L.	- -	13 17 47.49	128.28	66.54	12 54 51.9	-864.4	
	58 Virginis -	6	13 10 6.86			9 48		
	♊ Virginis -	1	13 17 48.78			S.10 26		
14	58 Virginis -	6	13 10 6.86			S. 9 48		
	♊ Virginis -	1	13 17 48.77			S.10 26		

438 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of Q's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of Q's R.A. in 1 hour of Long.	Sideral Time of Q's Sem. pas. mer.	Declination.		
May 14	Moon I. v.	12.0	h m s 13 43 39.80	130.52	67.12	S. 15 42 0.7	-805.3	
	Moon I. L.	-	14 10 1.20	133.10	67.78	18 16 14.9	735.3	
	B.A.C. 4700	5½	14 3 11.49			15 38		
	B.A.C. 4722	6	14 7 41.42			S. 17 32		
15	B.A.C. 4700	5½	14 3 11.49			S. 15 38		
	B.A.C. 4722	6	14 7 41.42			17 32		
	Moon I. v.	13.0	14 36 54.87	135.86	68.49	20 35 26.7	-654.9	
	Moon I. L.	-	15 4 21.58	138.57	69.18	22 37 34.8	564.9	
20	Librae -	3½	14 55 52.72			24 44		
	Librae -	4½	15 4 14.65			S. 19 15		
	Librae -	3½	14 55 52.73			S. 24 44		
	Librae -	4½	15 4 14.66			19 15		
16	Moon II. v.	14.1	15 34 39.01	141.10	69.81	24 20 50.1	-466.4	
	Scorpii -	3½	16 12 40.77			25 15		
	Scorpii -	1½	16 20 49.37			S. 26 7		
	Scorpii -	3½	16 12 40.78			S. 25 15		
17	Scorpii -	1½	16 20 49.38			26 7		
	Moon II. L.	-	16 3 4.26	143.00	70.30	25 43 39.8	-360.9	
	Moon II. v.	15.1	16 31 48.26	144.19	70.62	26 44 52.3	250.6	
	Ophiuchi -	3½	17 13 24.46			24 51		
18	Ophiuchi -	4	17 18 24.61			S. 29 44		
	Ophiuchi -	3½	17 13 24.48			S. 24 51		
	Ophiuchi -	4	17 18 24.63			29 44		
	Moon II. L.	-	17 0 41.39	144.50	70.73	27 23 43.4	-137.7	
19	Moon II. v.	16.2	17 29 32.65	143.88	70.60	27 39 57.7	-24.9	
	γ Sagittarii	3½	17 56 48.74			30 25		
	δ Sagittarii	3½	18 12 1.42			S. 29 53		
	γ Sagittarii	3½	17 56 48.76			S. 30 25		
20	δ Sagittarii	3½	18 12 1.44			29 53		
	Moon II. L.	-	17 58 10.71	142.32	70.23	27 33 50.7	+85.5	
	Moon II. v.	17.2	18 26 25.06	139.95	69.66	27 6 4.9	191.2	
	σ Sagittarii	2½	18 46 34.57			26 28		
21	τ Sagittarii	3½	18 58 11.29			S. 27 52		
	σ Sagittarii	2½	18 46 34.60			S. 26 28		
	τ Sagittarii	3½	18 58 11.32			27 52		
	Moon II. L.	-	18 54 6.84	136.93	68.92	26 17 47.1	+290.6	
22	Moon II. v.	18.2	19 21 9.50	133.47	68.05	25 10 21.1	382.4	
	λ Sagittarii	4½	19 28 10.31			25 11		
	φ Sagittarii	5	19 38 10.94			S. 20 6		
	λ Sagittarii	4½	19 28 10.34			S. 25 11		
23	φ Sagittarii	5	19 38 10.97			20 6		
	Moon II. L.	-	19 47 29.15	129.79	67.11	23 45 22.3	+466.0	
	Moon II. v.	19.3	20 13 4.45	126.11	66.15	22 4 30.1	+541.3	
	19 Capricorni	6	20 46 52.21			18 27		
24	21 Capricorni	6	20 52 57.86			S. 18 5		
	22 19 Capricorni	6	20 46 52.24			S. 18 27		

MOON-CULMINATING STARS, 1859. 439

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					
			Apparent Right Ascension in Time.	Var. of (<i>s</i> 's R.A. in 1 hour of Long.	Sidereal Time of (<i>s</i> 's Sem. pas. mer.	Declination.	Var. of (<i>s</i> 's Dec. in 1 hour of Long.	
			h m s	"	"	° ' "	"	
May 22	21 Capricorni	6	20 52 57.90			S. 18 5		
	Moon II. L.	- -	20 37 56.48	122.61	65.23	20 9 24.8	+608.3	
	Moon II. U.	20.3	21 2 8.33	119.44	64.37	18 1 43.2	667.4	
	γ Capricorni	3½	21 32 18.71			17 18		
	δ Capricorni	3	21 39 17.40			S. 16 46		
23	γ Capricorni	3½	21 32 18.74			S. 17 18		
	δ Capricorni	3	21 39 17.44			16 46		
	Moon II. L.	- -	21 25 44.71	116.71	63.62	15 42 56.1	+719.2	
	Moon II. U.	21.3	21 48 51.56	114.53	63.01	13 14 28.9	764.2	
	θ Aquarii -	4½	22 9 25.34			8 29		
	σ Aquarii -	4½	22 23 12.71			S. 11 24		
24	θ Aquarii -	4½	22 9 25.37			S. 8 29		
	σ Aquarii -	4½	22 23 12.74			11 24		
	Moon II. L.	- -	22 11 35.80	112.95	62.57	10 37 41.6	+802.7	
	Moon II. U.	22.4	22 34 5.05	112.04	62.30	7 53 49.7	835.0	
	λ Aquarii -	4	22 45 17.02			8 20		
	81 Aquarii -	6	22 54 5.64			S. 7 49		
25	λ Aquarii -	4	22 45 17.05			S. 8 20		
	81 Aquarii -	6	22 54 5.67			7 49		
	Moon II. L.	- -	22 56 27.54	111.83	62.23	5 4 6.8	+861.2	
	Moon II. U.	23.4	23 18 52.01	112.38	62.37	S. 2 9 46.6	881.1	
	λ Piscium -	5	23 34 52.48			N. 1 0		
	21 Piscium -	6	23 42 15.74			N. 0 18		
26	λ Piscium -	5	23 34 52.52			N. 1 0		
	21 Piscium -	6	23 42 15.77			0 18		
	Moon II. L.	- -	23 41 27.68	113.70	62.72	0 47 53.3	+894.4	
	Moon II. U.	24.4	0 4 24.10	115.84	63.30	3 47 28.0	900.2	
	d Piscium *	5½	0 13 21.78			7 25		
	45 Piscium *	6	0 18 26.90			N. 6 55		
27	d Piscium *	5½	0 13 21.80			N. 7 25		
	45 Piscium *	6	0 18 26.93			6 55		
	Moon II. L.	- -	0 27 51.30	118.83	64.10	6 47 22.9	+897.5	
	Moon II. U.	25.4	0 51 59.52	122.68	65.13	9 45 47.9	884.9	
	γ Piscium -	3½	1 23 57.33			14 37		
	101 Piscium *	6	1 28 15.17			N. 13 57		
28	Moon II. L.	- -	1 16 59.09	127.39	66.37	N. 12 40 35.1	+860.9	
	Moon II. U.	26.5	1 43 0.10	132.91	67.81	15 29 14.1	823.2	
29	Moon II. L.	- -	2 10 11.67	139.13	69.40	N. 18 8 50.3	+770.0	
	Moon II. U.	27.5	2 38 41.25	145.87	71.10	20 36 4.4	699.2	
30	Moon II. L.	- -	3 8 33.25	152.81	72.81	N. 22 47 15.6	+609.3	
	Moon II. U.	28.5	3 39 47.74	159.53	74.46	24 38 29.4	499.6	
31	Moon II. L.	- -	4 12 18.97	165.50	75.88	N. 26 5 51.4	+370.9	
June 1	Moon I. U.	0.2	4 43 20.51	170.00	77.00	N. 27 5 47.4	+225.9	
	Moon I. L.	- -	5 17 39.92	172.89	77.68	27 35 27.6	+ 69.2	
2	Moon I. U.	1.2	5 52 21.50	173.65	77.87	N. 27 33 7.8	- 92.9	

440 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
June 2	Moon L. L.	- -	^h 6 ^m 26 ^s 58.82	^s 172.20	^s 77.54	N. 26° 58' 25".1	-253.3
3	Moon I. U.	2.3	7 1 6.73	168.81	76.75	N. 25 52 21.9	-405.2
	Moon L. L.	- -	7 34 24.42	163.93	75.62	24 17 15.8	543.0
4	Moon I. U.	3.3	8 6 37.43	158.13	74.24	N. 22 16 20.3	-663.0
	Moon L. L.	- -	8 37 38.16	151.98	72.75	19 53 21.5	763.4
5	γ Cancri - -	6	8 24 34.29			N. 20 55	
	γ Cancri - -	4½	8 35 8.64			21 58	
	Moon I. U.	4.4	9 7 25.35	145.95	71.26	17 12 18.5	-843.8
	Moon L. L.	- -	9 36 2.62	140.38	69.87	14 17 6.4	905.1
	♁ Leonis - *	3½	9 33 39.08			10 32	
	♁ Leonis - *	5	9 50 39.67			N. 13 7	
6	♁ Leonis - *	3½	9 33 39.07			N. 10 32	
	♁ Leonis - *	5	9 50 39.66			13 7	
	Moon I. U.	5.4	10 3 37.10	135.51	68.62	11 11 26.3	-948.8
	Moon L. L.	- -	10 30 18.16	131.48	67.57	7 58 40.0	976.4
	♁ Leonis - *	4	10 25 24.84			10 2	
	♁ Leonis - *	5	10 41 52.44			N. 11 17	
7	♁ Leonis - *	4	10 25 24.83			N. 10 2	
	♁ Leonis - *	5	10 41 52.43			11 17	
	Moon I. U.	6.4	10 56 16.27	128.36	66.75	4 41 50.0	-989.7
	Moon L. L.	- -	11 21 42.36	126.15	66.15	N. 1 23 40.4	989.9
	♁ Leonis - -	4½	11 9 31.46			S. 2 53	
	♁ Leonis - -	5	11 20 43.13			N. 3 38	
8	♁ Leonis - -	4½	11 9 31.45			S. 2 53	
	♁ Leonis - -	5	11 20 43.12			N. 3 38	
	Moon I. U.	7.5	11 46 47.35	124.83	65.79	S. 1 53 20.5	-978.3
	Moon L. L.	- -	12 11 41.76	124.38	65.66	S. 5 6 55.5	955.7
	γ Virginis -	3½	12 12 43.79			N. 0 7	
	γ Virginis -	6	12 26 32.57			S. 8 40	
9	γ Virginis -	3½	12 12 43.78			N. 0 7	
	γ Virginis -	6	12 26 32.56			S. 8 40	
	Moon I. U.	8.5	12 36 35.53	124.71	65.73	8 14 56.7	-922.8
	Moon L. L.	- -	13 1 37.76	125.78	66.00	11 15 22.3	879.8
	58 Virginis -	6	13 10 6.75			9 48	
	α Virginis -	1	13 17 48.68			S. 10 26	
10	58 Virginis -	6	13 10 6.74			S. 9 48	
	α Virginis -	1	13 17 48.67			10 26	
	Moon I. U.	9.5	13 26 56.62	127.47	66.43	14 6 12.7	-827.0
	Moon L. L.	- -	13 52 38.90	129.66	66.99	16 45 30.9	764.4
	85 Virginis -	6	13 38 2.64			15 4	
	89 Virginis -	5	13 42 15.76			S. 17 26	
11	85 Virginis -	6	13 38 2.63			S. 15 4	
	89 Virginis -	5	13 42 15.76			17 26	
	Moon I. U.	10.6	14 18 49.77	132.20	67.64	19 11 21.3	-692.4
	Moon L. L.	- -	14 45 32.47	134.93	68.32	21 21 51.5	-611.1
20	Libræ - -	3½	14 55 52.84			S. 24 44	

MOON-CULMINATING STARS, 1859. 441

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of (ζ 's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of (ζ 's R. A. in 1 hour of Long.	Sidereal Time of (ζ 's Sem. pas. mer.	Declination.		
			^h ^m ^s	"	"	[°] ['] ["]	"	
June 11	α Libræ - -	4½	15 4 14.79			S. 19 15		
12	20 Libræ - -	3½	14 55 52.84			S. 24 44		
	α Libræ - -	4½	15 4 14.79			19 15		
	Moon I. U.	11.6	15 12 47.80	137.60	68.98	23 15 12.8	-521.1	
	Moon I. L.	- -	15 40 33.94	140.02	69.58	24 49 46.9	423.4	
	δ Scorpil - -	2½	15 52 3.63			22 13		
	β Scorpil - -	2	15 57 18.03			S. 19 25		
13	δ Scorpil - -	2½	15 52 3.63			S. 22 13		
	β Scorpil - -	2	15 57 18.03			19 25		
	Moon I. U.	12.7	16 8 46.31	141.94	70.05	26 4 8.7	-319.3	
	Moon I. L.	- -	16 37 17.64	143.15	70.33	26 57 12.2	210.7	
	α Scorpil - -	1½	16 20 49.71			26 7		
	τ Scorpil - -	3½	16 27 10.43			S. 27 55		
14	α Scorpil - -	1½	16 20 49.72			S. 26 7		
	τ Scorpil - -	3½	16 27 10.44			27 55		
	Moon I. U.	13.7	17 5 58.40	143.49	70.41	27 28 16.1	- 99.8	
	θ Ophiuchi -	3½	17 13 24.95			24 51		
	d Ophiuchi -	4	17 18 25.13			S. 29 44		
15	θ Ophiuchi -	3½	17 13 24.96			S. 24 51		
	d Ophiuchi -	4	17 18 25.14			29 44		
	Moon II. L.	- -	17 36 58.28	142.86	70.25	27 37 6.9	+ 11.1	
	Moon II. U.	14.7	18 5 24.21	141.31	69.87	27 24 0.3	119.4	
	λ Sagittarii	3	18 19 20.03			25 30		
	ϕ Sagittarii	3½	18 36 54.76			S. 27 8		
16	λ Sagittarii	3	18 19 20.05			S. 25 30		
	ϕ Sagittarii	3½	18 36 54.78			27 8		
	Moon II. L.	- -	18 33 26.46	138.94	69.27	26 49 39.8	+223.1	
	Moon II. U.	15.8	19 0 56.14	135.92	68.51	25 55 11.9	320.3	
	h Sagittarii	4½	19 28 11.06			25 11		
	f Sagittarii	5	19 38 11.69			S. 20 6		
17	h Sagittarii	4½	19 28 11.09			S. 25 11		
	f Sagittarii	5	19 38 11.71			20 6		
	Moon II. L.	- -	19 27 46.66	132.45	67.62	24 42 2.9	+409.8	
	Moon II. U.	16.8	19 53 54.00	128.76	66.67	23 11 49.6	490.9	
	σ Capricorni	5½	20 11 18.79			19 33		
	ρ Capricorni	5	20 20 52.16			S. 18 17		
18	σ Capricorni	5½	20 11 18.81			S. 19 33		
	ρ Capricorni	5	20 20 52.18			18 17		
	Moon II. L.	- -	20 19 16.75	125.05	65.70	21 26 16.1	+563.3	
	Moon II. U.	17.8	20 43 55.86	121.51	64.77	19 27 5.8	627.0	
	θ Capricorni	4	20 58 4.34			17 47		
	ι Capricorni	4½	21 14 26.64			S. 17 26		
19	θ Capricorni	4	20 58 4.37			S. 17 47		
	ι Capricorni	4½	21 14 26.67			17 26		
	Moon II. L.	- -	21 7 54.28	118.29	63.91	17 16 0.2	+682.6	
	Moon II. U.	18.9	21 31 16.56	115.50	63.16	S. 14 54 35.1	+730.4	

42 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. per. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.	
			h m s	s	s	° ' "	"	
June 19	μ Capricorni	5	21 45 39.32			S. 14 13		
	ι Aquarii -	4	21 58 51.96			14 33		
20	μ Capricorni	5	21 45 39.35			S. 14 13		
	ι Aquarii -	4	21 58 52.00			14 33		
	Moon II. L.	- -	21 54 8.52	113.25	62.55	12 24 20.3	+770.9	
	Moon II. U.	19.9	22 16 36.92	111.59	62.10	9 46 39.3	804.8	
	67 Aquarii -	6	22 35 54.93			7 42		
	λ Aquarii -	4	22 45 17.89			S. 8 20		
21	67 Aquarii -	6	22 35 54.98			S. 7 42		
	λ Aquarii -	4	22 45 17.94			8 20		
	Moon II. L.	- -	22 38 49.30	110.59	61.84	7 2 50.1	+832.4	
	Moon II. U.	20.9	23 0 53.75	110.28	61.76	S. 4 14 7.5	853.8	
	κ Piscium -	4½	23 19 44.57			N. 0 29		
	λ Piscium -	5	23 34 53.35			N. 1 0		
22	κ Piscium -	4½	23 19 44.61			N. 0 29		
	λ Piscium -	5	23 34 53.38			N. 1 0		
	Moon II. L.	- -	23 22 58.88	110.70	61.89	S. 1 21 44.2	+869.1	
	Moon II. U.	22.0	23 45 13.77	111.91	62.24	N. 1 33 5.0	878.0	
	35 Piscium *	6	0 7 45.16			8 2		
	d Piscium *	5½	0 13 22.63			N. 7 25		
23	35 Piscium *	6	0 7 45.20			N. 8 2		
	d Piscium *	5½	0 13 22.66			7 25		
	Moon II. L.	- -	0 7 48.00	113.93	62.82	4 29 0.8	+880.1	
	Moon II. U.	23.0	0 30 51.53	116.80	63.62	7 24 36.6	874.5	
	ε Piscium *	4	0 55 39.49			7 8		
	ζ Piscium *	4½	1 6 23.74			N. 6 50		
24	ε Piscium *	4	0 55 39.52			N. 7 8		
	ζ Piscium *	4½	1 6 23.77			6 50		
	Moon II. L.	- -	0 54 34.71	120.55	64.64	10 18 13.1	+860.0	
	Moon II. U.	24.0	1 19 8.12	125.18	65.89	13 7 55.6	835.2	
	ο Piscium *	4	1 37 58.74			8 27		
	54 Ceti - - *	6	1 43 24.86			N. 10 21		
25	ο Piscium *	4	1 37 58.77			N. 8 27		
	54 Ceti - - *	6	1 43 24.89			10 21		
	Moon II. L.	- -	1 44 42.30	130.67	67.35	15 51 28.8	+798.1	
	Moon II. U.	25.0	2 11 27.15	136.94	68.97	18 26 13.9	746.8	
	ν Arietis -	5½	2 30 50.37			21 21		
	ε Arietis -	4½	2 51 10.69			N. 20 47		
26	Moon II. L.	- -	2 39 31.22	143.83	70.72	N. 20 49 6.5	+679.0	
	Moon II. U.	26.1	3 9 0.48	151.08	72.52	22 56 37.4	592.9	
27	Moon II. L.	- -	3 39 56.92	158.29	74.27	N. 24 44 57.7	+487.1	
	Moon II. U.	27.1	4 12 17.02	164.93	75.85	26 10 9.7	361.6	
28	Moon II. L.	- -	4 45 50.42	170.39	77.13	N. 27 8 26.4	+218.3	
	Moon II. U.	28.1	5 20 19.58	174.12	78.00	27 36 34.7	+61.1	
29	Moon II. L.	- -	5 55 20.85	175.69	78.36	N. 27 32 21.0	-104.1	

MOON-CULMINATING STARS, 1859. 443

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
June 29	Moon II. U.	29.2	^h 6 ^m 30 ^s 27.14	174.95	78.20	N. 26 54 53.1	— 270.0
30	Moon I. L.	- -	7 2 36.34	172.23	77.53	N. 25 44 50.3	— 428.7
July 1	Moon I. U.	0.9	7 36 37.50	167.72	76.46	N. 24 4 18.3	— 573.8
	Moon I. L.	- -	8 9 36.99	162.07	75.12	21 56 31.7	700.4
2	Moon I. U.	2.0	8 41 24.92	155.89	73.64	N. 19 25 33.5	— 805.6
	Moon I. L.	- -	9 11 58.22	149.70	72.13	16 35 46.3	888.5
3	Moon I. U.	3.0	9 41 19.34	143.92	70.71	N. 13 31 35.1	— 949.8
	Moon I. L.	- -	10 9 34.92	138.81	69.43	10 17 11.9	990.9
4	♄ Leonis - *	5	9 52 46.99			N. 8 43	
	♌ Leonis - *	1½	10 0 53.04			12 39	
	Moon I. U.	4.0	10 36 54.03	134.53	68.35	6 56 27.5	— 1013.6
	Moon I. L.	- -	11 3 27.23	131.16	67.48	3 32 49.5	1020.2
	♋ Leonis - -	6	10 48 28.84			1 29	
	♏ Leonis - *	5	10 53 18.28			N. 4 22	
5	♋ Leonis - -	6	10 48 28.84			N. 1 29	
	♏ Leonis - *	5	10 53 18.28			4 22	
	Moon I. U.	5.1	11 29 25.53	128.72	66.85	N. 0 9 21.0	— 1012.3
	Moon I. L.	- -	11 55 0.03	127.18	66.46	S. 3 11 15.3	991.8
	♍ Virginis -	3½	11 43 22.95			N. 2 33	
	♎ Virginis -	3½	12 12 43.54			N. 0 7	
6	♍ Virginis -	3½	11 43 22.94			N. 2 33	
	♎ Virginis -	3½	12 12 43.54			N. 0 7	
	Moon I. U.	6.1	12 20 21.32	126.51	66.29	S. 6 26 35.2	— 959.8
	Moon I. L.	- -	12 45 39.37	126.63	66.33	9 34 28.2	917.4
	♏ Virginis -	5	12 32 0.66			7 13	
	♏ Virginis -	5	12 47 3.62			S. 8 46	
7	♏ Virginis -	5	12 32 0.65			S. 7 13	
	♏ Virginis -	5	12 47 3.61			8 46	
	Moon I. U.	7.1	13 11 3.26	127.46	66.56	12 32 54.2	— 865.4
	Moon I. L.	- -	13 36 40.89	128.90	66.93	15 20 1.1	804.3
	83 Virginis -	6	13 36 56.29			15 28	
	89 Virginis -	5	13 42 15.56			S. 17 26	
8	83 Virginis -	6	13 36 56.28			S. 15 28	
	89 Virginis -	5	13 42 15.55			17 26	
	Moon I. U.	8.2	14 2 38.76	130.82	67.43	17 54 2.1	— 734.5
	Moon I. L.	- -	14 29 1.75	133.05	68.01	20 13 14.9	656.3
	5 Libræ - -	6	14 38 14.51			14 52	
	♏ Libræ - -	2½	14 43 7.94			S. 15 28	
9	5 Libræ - -	6	14 38 14.50			S. 14 52	
	♏ Libræ - -	2½	14 43 7.94			15 28	
	Moon I. U.	9.2	14 55 52.62	135.43	68.61	22 16 1.7	— 570.2
	Moon I. L.	- -	15 23 11.90	137.75	69.18	24 0 51.2	— 476.9
	39 Libræ - -	4½	15 28 31.88			27 40	
	42 Libræ - -	5½	15 32 0.55			S. 23 21	
10	39 Libræ - -	4½	15 28 31.88			S. 27 40	

444 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
July 10	42 Libræ - -	5½	h m s 15 32 0.54			S. 23 21		
	Moon I. U.	10.2	15 50 57.53	139.79	69.67	25 26 22.3	-377.3	
	Moon I. L.	- -	16 19 4.84	141.33	70.03	26 31 25.9	272.6	
	♏ Scorpii - -	3½	16 12 41.13			25 15		
	α Scorpii - -	1½	16 20 49.78			S. 26 7		
	♏ Scorpii - -	3½	16 12 41.13			S. 25 15		
	α Scorpii - -	1½	16 20 49.77			26 7		
	Moon I. U.	11.3	16 47 26.76	142.20	70.21	27 15 11.9	-164.7	
	Moon I. L.	- -	17 15 54.41	142.26	70.19	27 37 12.5	-55.4	
	θ Ophiuchi -	3½	17 13 25.13			24 51		
	δ Ophiuchi -	4	17 18 25.33			S. 29 44		
	θ Ophiuchi -	3½	17 13 25.13			S. 24 51		
	δ Ophiuchi -	4	17 18 25.33			29 44		
	Moon I. U.	12.3	17 44 17.54	141.45	69.95	27 37 23.5	+53.2	
	Moon I. L.	- -	18 12 25.92	139.81	69.50	27 16 7.6	158.8	
	δ Sagittarii	3½	18 12 2.41			29 53		
	λ Sagittarii	3	18 19 20.38			S. 25 30		
	δ Sagittarii	3½	18 12 2.42			S. 29 53		
	λ Sagittarii	3	18 19 20.39			25 30		
	Moon I. U.	13.3	18 40 9.98	137.42	68.86	26 34 11.9	+259.5	
	Moon I. L.	- -	19 7 21.64	134.44	68.07	25 32 44.7	353.8	
	τ Sagittarii	3½	18 58 12.48			27 52		
	κ Sagittarii	3	19 1 26.71			S. 21 14		
	τ Sagittarii	3½	18 58 12.49			S. 27 52		
	κ Sagittarii	3	19 1 26.72			21 14		
	Moon II. U.	14.4	19 36 9.35	130.92	67.17	24 13 10.7	+440.5	
	ω Sagittarii	5	19 47 16.24			26 40		
	Α Sagittarii	5	19 50 25.73			S. 26 34		
	ω Sagittarii	5	19 47 16.25			S. 26 40		
	Α Sagittarii	5	19 50 25.75			26 34		
	Moon II. L.	- -	20 1 58.99	127.34	66.22	22 37 6.5	+518.8	
	Moon II. U.	15.4	20 27 5.58	123.77	65.27	20 46 14.4	588.4	
	21 Capricorni	6	20 52 59.39			18 5		
	θ Capricorni	4	20 58 5.00			S. 17 47		
	21 Capricorni	6	20 52 59.41			S. 18 5		
	θ Capricorni	4	20 58 5.02			17 47		
	Moon II. L.	- -	20 51 30.17	120.37	64.35	18 42 18.4	+649.5	
	Moon II. U.	16.4	21 15 15.64	117.27	63.51	16 27 0.5	702.1	
	γ Capricorni	3½	21 32 20.33			17 18		
	δ Capricorni	3	21 39 19.04			S. 16 46		
	γ Capricorni	3½	21 32 20.35			S. 17 18		
	δ Capricorni	3	21 39 19.06			16 46		
	Moon II. L.	- -	21 38 26.35	114.59	62.78	14 1 58.9	+746.8	
	Moon II. U.	17.5	22 1 7.79	112.41	62.19	11 28 46.4	+784.0	
	σ Aquarii -	4½	22 23 14.39			11 24		
	κ Aquarii -	5	22 30 30.51			S. 4 57		

MOON-CULMINATING STARS, 1859. 445

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.	
			h m s	"	"	° ' "	"	"
July 18	♈ Aquarii -	4½	22 23 14.42			S. 11 24		
	♈ Aquarii -	5	22 30 30.54			4 57		
	Moon II. L.	- -	22 23 26.36	110.79	61.75	8 48	51.2	+814.1
	Moon II. U.	18.5	22 45 29.16	109.78	61.49	6 3	36.0	837.4
	♏ Aquarii -	4½	23 7 4.45			6 48		
	96 Aquarii -	5½	23 12 8.47			S. 5 53		
19	♏ Aquarii -	4½	23 7 4.48			S. 6 48		
	96 Aquarii -	5½	23 12 8.50			5 53		
	Moon II. L.	- -	23 7 23.83	109.44	61.42	3 14	19.9	+854.2
	Moon II. U.	19.5	23 29 18.52	109.79	61.55	S. 0 22	20.7	864.6
	♊ Piscium *	6	23 47 58.14			N. 6 17		
	♊ Piscium *	4	23 52 7.30			N. 6 5		
20	♊ Piscium *	6	23 47 58.17			N. 6 17		
	♊ Piscium *	4	23 52 7.33			6 5		
	Moon II. L.	- -	23 51 21.76	110.88	61.88	2 31	4.0	+868.4
	Moon II. U.	20.6	0 13 42.55	112.72	62.43	5 24	34.0	865.4
	B.A.C. 149 *	6	0 28 40.30			12 26		
	♊ Piscium *	4½	0 41 24.89			N. 6 49		
21	B.A.C. 149 *	6	0 28 40.33			N. 12 26		
	♊ Piscium *	4½	0 41 24.92			6 49		
	Moon II. L.	- -	0 36 30.28	115.37	63.20	8 16	42.6	+854.8
	Moon II. U.	21.6	0 59 54.70	118.84	64.19	11 5	54.9	835.8
	♊ Piscium -	3½	1 23 59.06			14 37		
	101 Piscium *	6	1 28 16.90			N. 13 57		
22	♊ Piscium -	3½	1 23 59.09			N. 14 37		
	101 Piscium *	6	1 28 16.93			13 57		
	Moon II. L.	- -	1 24 5.72	123.14	65.38	13 50	23.2	+807.2
	Moon II. U.	22.6	1 49 13.25	128.25	66.77	16 28	3.5	767.5
	♈ Arietis -	2	1 59 16.33			22 48		
	♊ Arietis -	5½	2 4 57.18			N. 20 33		
23	♈ Arietis -	2	1 59 16.36			N. 22 48		
	♊ Arietis -	5½	2 4 57.22			20 33		
	Moon II. L.	- -	2 15 26.77	134.12	68.33	18 56	32.7	+715.0
	Moon II. U.	23.7	2 42 54.61	140.61	70.01	21 13	5.5	647.8
	♈ Arietis -	4½	2 51 11.60			20 47		
	♊ Arietis -	4½	3 3 36.48			N. 19 12		
24	♈ Arietis -	4½	2 51 11.63			N. 20 47		
	♊ Arietis -	4½	3 3 36.51			19 12		
	Moon II. L.	- -	3 11 42.97	147.50	71.76	23 14	35.4	+564.3
	Moon II. U.	24.7	3 41 54.78	154.45	73.47	24 57	37.7	463.0
	♈ Tauri -	4½	4 17 54.44			22 30		
	♊ Tauri -	4½	4 33 49.06			N. 22 41		
25	♈ Tauri -	4½	4 17 54.48			N. 22 30		
	♊ Tauri -	4½	4 33 49.09			22 41		
	Moon II. L.	- -	4 13 28.26	161.03	75.07	26 18	36.0	+343.6
	Moon II. U.	25.7	4 46 15.73	166.69	76.40	N. 27 13	58.0	+207.2

446 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of (ϵ 's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of (ϵ 's R.A. in 1 hour of Long.	Sidereal Time of (ϵ 's Sem. per. mer.	Declination.		
July 26	Moon II. L.	- -	^h ^m ^s 5 20 3.05	^s 170.91	^s 77.38	[°] ['] ["] N. 27 40 33.8	["] + 56.6	
	Moon II. U.	26.8	5 54 30.19	173.26	77.91	27 35 59.4	- 103.5	
27	Moon II. L.	- -	6 29 13.11	173.52	77.95	N. 26 58 57.2	- 266.8	
	Moon II. U.	27.8	7. 3 46.73	171.75	77.52	25 49 31.5	426.2	
28	Moon II. L.	- -	7 37 48.28	168.25	76.67	N. 24 9 9.9	- 575.0	
	Moon II. U.	28.8	8 10 59.88	163.52	75.54	22 0 34.2	707.7	
29	Moon I. L.	- -	8 40 41.60	158.34	74.22	N. 19 27 23.7	- 820.4	
30	Moon I. U.	0.6	9 11 48.06	152.75	72.85	N. 16 33 52.9	- 910.9	
	Moon I. L.	- -	9 41 48.56	147.40	71.52	13 24 31.8	978.8	
31	Moon I. U.	1.6	10 10 47.77	142.58	70.33	N. 10 3 48.9	- 1024.8	
	Moon I. L.	- -	10 38 53.39	138.49	69.30	6 35 59.8	1050.1	
Aug. 1	Moon I. U.	2.7	11 6 14.76	135.22	68.48	N. 3 5 0.7	- 1056.8	
	Moon I. L.	- -	11 33 2.16	132.83	67.88	S. 0 25 35.1	1046.6	
2	Moon I. U.	3.7	11 59 25.94	131.28	67.51	S. 3 52 37.0	- 1021.4	
	Moon I. L.	- -	12 25 36.20	130.56	67.35	7 13 16.5	983.1	
q Virginis -		6	12 26 32.07			8 41		
	x Virginis -	5	12 32 0.41			S. 7 13		
3	q Virginis -	6	12 26 32.06			S. 8 41		
	x Virginis -	5	12 32 0.40			7 13		
Moon I. U.		4.8	12 51 42.37	130.58	67.39	10 25 4.4	- 933.0	
	Moon I. L.	- -	13 17 52.85	131.27	67.59	13 25 46.6	872.4	
53 Virginis -		5	13 4 35.49			15 26		
	a Virginis -	1	13 17 48.18			S. 10 26		
4	53 Virginis -	5	13 4 35.48			S. 15 26		
	a Virginis -	1	13 17 48.16			10 26		
Moon I. U.		5.8	13 44 14.97	132.50	67.93	16 13 22.9	- 802.2	
	Moon I. L.	- -	14 10 54.31	134.12	68.38	18 46 5.0	723.4	
B.A.C. 4700		5.8	14 3 11.00			15 38		
	B.A.C. 4722	6	14 7 40.94			S. 17 33		
5	B.A.C. 4700	5.8	14 3 10.99			S. 15 38		
	B.A.C. 4722	6	14 7 40.93			17 33		
Moon I. U.		6.8	14 37 54.83	135.99	68.87	21. 2 13.6	- 636.8	
	Moon I. L.	- -	15 5 18.30	137.91	69.37	23 0 19.7	543.1	
20 Libræ - -		3.8	14 55 52.42			24 44		
	i' Libræ - -	4.8	15 4 14.42			S. 19 15		
6	20 Libræ - -	3.8	14 55 52.41			S. 24 44		
	i' Libræ - -	4.8	15 4 14.40			19 15		
Moon I. U.		7.9	15 33 4.20	139.70	69.82	24 39 5.3	- 443.5	
	Moon I. L.	- -	16 1 9.61	141.13	70.17	25 57 25.8	339.2	
o Scorpii - -		3.8	16 12 40.91			25 15		
	a Scorpii - -	1.8	16 20 49.56			S. 26 7		
7	o Scorpii - -	3.8	16 12 40.90			S. 25 15		
	a Scorpii - -	1.8	16 20 49.55			26 7		
Moon I. U.		8.9	16 29 29.28	142.04	70.37	S. 26 54 32.3	- 231.5	

MOON-CULMINATING STARS, 1859. 447

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of 's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of 's R.A. in 1 hour of Long.	Sidereal Time of 's Sem. per. mer.	Declination.		
Aug. 7	Moon I. L.	- -	^h 16 ^m 57 ^s 56.01	^s 142.28	^s 70.40	^o S. 27 29 54.5	["] - 122.1	
	♄ Ophiuchi-	3½	17 13 25.01			24 51		
	♄ Ophiuchi-	4	17 18 25.20			S. 29 44		
8	♄ Ophiuchi-	3½	17 13 25.00			S. 24 51		
	♄ Ophiuchi-	4	17 18 25.19			29 44		
	Moon I. U.	9.9	17 26 21.15	141.77	70.23	27 43 23.9	- 13.0	
	Moon I. L.	- -	17 54 35.49	140.48	69.86	27 35 14.0	+ 94.1	
	♄ Sagittarii	5	17 38 45.13			27 46		
	♄ Sagittarii	5	17 51 15.14			S. 23 48		
9	♄ Sagittarii	5	17 38 45.13			S. 27 46		
	♄ Sagittarii	5	17 51 15.13			23 48		
	Moon I. U.	11.0	18 22 29.96	138.48	69.30	27 6 0.9	+ 197.3	
	Moon I. L.	- -	18 49 56.58	135.86	68.58	26 16 40.7	295.0	
	♄ Sagittarii	3½	18 36 55.20			27 8		
	♄ Sagittarii	2½	18 46 35.76			S. 26 28		
10	♄ Sagittarii	3½	18 36 55.20			S. 27 8		
	♄ Sagittarii	2½	18 46 35.75			26 28		
	Moon I. U.	12.0	19 16 48.90	132.80	67.73	25 8 26.9	+ 386.1	
	Moon I. L.	- -	19 43 2.58	129.45	66.82	23 42 44.9	469.6	
	♄ Sagittarii	4½	19 28 11.75			25 11		
	♄ Sagittarii	5	19 38 12.40			S. 20 6		
11	♄ Sagittarii	4½	19 28 11.74			S. 25 11		
	♄ Sagittarii	5	19 38 12.40			20 6		
	Moon I. U.	13.0	20 8 35.33	126.00	65.87	22 1 9.2	+ 545.0	
	Moon I. L.	- -	20 33 26.96	122.63	64.93	20 5 18.7	612.1	
	♄ Capricorni	5	20 20 53.04			18 16		
	♄ Capricorni	5	20 31 27.30			S. 15 27		
12	♄ Capricorni	5	20 20 53.05			S. 18 16		
	♄ Capricorni	5	20 31 27.30			15 27		
	Moon I. U.	14.1	20 57 39.09	119.45	64.04	17 56 53.2	+ 670.8	
	♄ Capricorni	4½	21 14 27.75			17 26		
	♄ Capricorni	3½	21 32 20.77			S. 17 18		
13	♄ Capricorni	4½	21 14 27.76			S. 17 26		
	♄ Capricorni	3½	21 32 20.78			17 18		
	Moon I. L.	- -	21 21 14.89	116.58	63.25	15 37 32.3	+ 721.4	
	Moon II. U.	15.1	21 46 23.88	114.03	62.56	13 8 51.7	764.1	
	♄ Aquarii -	4½	22 9 27.47			8 29		
	♄ Aquarii -	4½	22 23 14.92			S. 11 24		
14	♄ Aquarii -	4½	22 9 27.48			S. 8 29		
	♄ Aquarii -	4½	22 23 14.94			11 24		
	Moon II. L.	- -	22 9 0.12	112.09	62.01	10 32 25.1	+ 799.1	
	Moon II. U.	16.1	22 31 16.22	110.69	61.62	7 49 42.1	+ 826.8	
	♄ Aquarii -	4	22 45 19.27			8 20		
	♄ Aquarii -	4½	23 7 5.05			S. 6 48		
15	♄ Aquarii -	4	22 45 19.29			S. 8 20		
	♄ Aquarii -	4½	23 7 5.07			S. 6 48		

448 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
Aug. 15	Moon II. L.	- -	h m s 22 53 18.95	109.87	61.40	S. 5 2 9.4	+847.4
	Moon II. U.	17.2	23 15 15.49	109.66	61.36	S. 2 11 11.7	861.0
	♈ Piscium *	4½	23 32 45.63			N. 4 52	
	21 Piscium -	6	23 42 18.12			N. 0 18	
16	♈ Piscium *	4½	23 32 45.65			N. 4 52	
	21 Piscium -	6	23 42 18.14			0 18	
	Moon II. L.	- -	23 37 13.45	110.11	61.51	0 41 46.7	+867.5
	Moon II. U.	18.2	23 59 20.79	111.23	61.86	3 35 20.6	866.9
	♏ Piscium *	5½	0 13 24.22			7 25	
	45 Piscium *	6	0 18 29.35			N. 6 55	
	♏ Piscium *	5½	0 13 24.24			N. 7 25	
	45 Piscium *	6	0 18 29.38			6 55	
	Moon II. L.	- -	0 21 45.81	113.05	62.40	6 28 2.9	+858.9
	Moon II. U.	19.2	0 44 37.01	115.60	63.15	9 18 21.0	842.8
	♈ Piscium *	4	0 55 41.14			7 8	
	♏ Piscium -	3½	1 23 59.87			N. 14 37	
18	♈ Piscium *	4	0 55 41.16			N. 7 8	
	♏ Piscium -	3½	1 23 59.90			14 37	
	Moon II. L.	- -	1 8 3.18	118.88	64.10	12 4 34.5	+818.0
	Moon II. U.	20.3	1 32 13.13	122.90	65.23	14 44 53.5	783.5
	♈ Arietis -	2½	1 46 54.73			20 7	
	♏ Arietis -	2	1 59 17.20			N. 22 48	
	♈ Arietis -	2½	1 46 54.76			N. 20 7	
	♏ Arietis -	2	1 59 17.23			22 48	
	Moon II. L.	- -	1 57 15.50	127.61	66.54	17 17 16.1	+738.3
	Moon II. U.	21.3	2 23 18.27	132.95	67.98	19 39 25.5	681.1
	♈ Arietis -	4½	2 51 12.49			20 47	
	♏ Arietis -	4½	3 3 37.37			N. 19 12	
20	♈ Arietis -	4½	2 51 12.53			N. 20 47	
	♏ Arietis -	4½	3 3 37.40			19 12	
	Moon II. L.	- -	2 50 28.27	138.79	69.53	21 48 49.3	+610.5
	Moon II. U.	22.3	3 18 50.32	144.92	71.12	23 42 39.6	525.4
	♏ Tauri -	3	3 39 9.48			23 40	
	♏ Tauri -	4½	3 56 24.75			N. 21 42	
	♏ Tauri -	3	3 39 9.52			N. 23 40	
	♏ Tauri -	4½	3 56 24.78			21 42	
	Moon II. L.	- -	3 48 26.20	151.04	72.67	25 17 57.2	+424.9
	Moon II. U.	23.4	4 19 13.83	156.80	74.10	26 31 37.3	309.2
	♏ Tauri -	6	5 10 51.07			21 57	
	♈ Tauri -	2	5 17 25.54			N. 28 29	
22	♏ Tauri -	6	5 10 51.10			N. 21 57	
	♈ Tauri -	2	5 17 25.58			28 29	
	Moon II. L.	- -	4 51 6.17	161.76	75.31	27 20 40.6	+179.0
	Moon II. U.	24.4	5 23 51.20	165.51	76.20	27 42 27.5	+ 37.0
	♊ Geminor.	6	6 1 12.75			23 8	
	♏ Geminor.	3½	6 6 24.39			N. 22 33	

MOON-CULMINATING STARS, 1859. 449

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.	
Aug. 23	3 Geminor.	6	^h ^m ^s 6 1 12.78	"	"	N. 23 8	"	
	7 Geminor.	3½	6 6 24.42			22 33		
	Moon II.L.	- -	5 57 12.28	167.72	76.71	27 34 56.5	-	113.2
	Moon II.U.	25.4	6 30 49.72	168.22	76.81	26 56 57.4		266.8
	5 Geminor.	4	6 55 46.91			20 46		
	8 Geminor.	3½	7 11 44.16			N. 22 14		
	24 Moon II.L.	- -	7 4 22.98	167.05	76.50	N. 25 48 23.7	-	418.0
	Moon II.U.	26.5	7 37 33.14	164.43	75.85	24 10 17.0		561.4
	25 Moon II.L.	- -	8 10 5.04	160.74	74.93	N. 22 4 40.7	-	692.1
	Moon II.U.	27.5	8 41 48.45	156.43	73.85	19 34 32.1		806.3
	26 Moon II.L.	- -	9 12 38.45	151.91	72.71	N. 16 43 25.5	-	901.4
	Moon II.U.	28.6	9 42 34.76	147.54	71.59	13 35 20.3		976.0
27 Moon II.L.	- -	10 11 40.96	143.60	70.58	N. 10 14 26.1	-	1029.5	
28 Moon I. U.	0.3	10 37 43.96	140.39	69.73	N. 6 44 53.9	-	1062.4	
	Moon I. L.	- -	11 5 32.07	137.75	69.05	N. 3 10 46.3		1075.6
29 Moon I. U.	1.3	11 32 53.14	135.89	68.59	S. 0 24 6.4	-	1070.2	
	Moon I. L.	- -	11 59 56.42	134.79	68.33	3 56 9.0		1047.6
30 Moon I. U.	2.4	12 26 50.99	134.43	68.26	S. 7 22 5.7	-	1009.4	
	Moon I. L.	- -	12 53 45.30	134.73	68.37	10 38 57.6		957.0
31 Moon I. U.	3.4	13 20 46.78	135.60	68.63	S. 13 44 4.1	-	892.1	
	Moon I. L.	- -	13 48 1.48	136.91	69.01	16 35 1.8		815.8
Sept. 1	83 Virginis -	6	13 36 55.70			15 28		
	89 Virginis -	5	13 42 14.95			S. 17 26		
	83 Virginis -	6	13 36 55.69			S. 15 28		
	89 Virginis -	5	13 42 14.94			17 26		
	Moon I. U.	4.4	14 15 33.82	138.51	69.46	19 9 43.7	-	729.7
	Moon I. L.	- -	14 43 26.21	140.23	69.93	21 26 20.1		635.1
	20 Libræ - -	3½	14 55 52.03			24 44		
	1 Libræ - -	4½	15 4 14.04			S. 19 15		
	2 20 Libræ - -	3½	14 55 52.02			S. 24 44		
	1 Libræ - -	4½	15 4 14.03			19 15		
	Moon I. U.	5.5	15 11 38.82	141.85	70.37	23 23 17.0	-	533.4
	Moon I. L.	- -	15 40 9.40	143.18	70.72	24 59 19.1		426.2
8 Scorpii - -	2½	15 52 2.99			22 13			
β Scorpii - -	2	15 57 17.42			S. 19 25			
3 8 Scorpii - -	2½	15 52 2.97			S. 22 13			
	β Scorpii - -	2	15 57 17.40			19 25		
Moon I. U.	6.5	16 8 53.39	144.05	70.95	26 13 31.1	-	315.3	
Moon I. L.	- -	16 37 44.16	144.30	71.01	27 5 19.0		202.5	
α Scorpii - -	1½	16 20 49.14			26 7			
τ Scorpii - -	3½	16 27 9.88			S. 27 55			
4 α Scorpii - -	1½	16 20 49.13			S. 26 7			
	τ Scorpii - -	3½	16 27 9.86			27 55		
Moon I. U.	7.5	17 6 33.62	143.82	70.88	S. 27 34 31.7	-	89.8	

450 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.	
			h m s	° ' "	° ' "	° ' "	° ' "	° ' "
Sept. 4	Moon I. L.	- -	17 35 12.77	142.58	70.54	S. 27 41 21.0	+ 21.0	
	θ Ophiuchi-	3½	17 13 24.62			24 51		
	d Ophiuchi -	4	17 18 24.81			S. 29 44		
5	θ Ophiuchi -	3½	17 13 24.61			S. 24 51		
	d Ophiuchi -	4	17 18 24.79			29 44		
	Moon I. U.	8.6	18 3 32.77	140.63	70.02	27 26 21.9	+ 128.1	
	Moon I. L.	- -	18 31 25.51	138.06	69.32	26 50 28.3	229.9	
	φ Sagittarii	3½	18 36 54.93			27 8		
	σ Sagittarii	2½	18 46 35.50			S. 26 28		
6	φ Sagittarii	3½	18 36 54.91			S. 27 8		
	σ Sagittarii	2½	18 46 35.49			26 28		
	Moon I. U.	9.6	18 58 44.43	135.03	68.50	25 54 50.5	+ 325.2	
	Moon I. L.	- -	19 25 24.87	131.68	67.57	24 40 51.5	413.3	
	χ ^s Sagittarii	6	19 17 1.72			24 14		
	h ^s Sagittarii	4½	19 28 11.57			S. 25 11		
7	χ ^s Sagittarii	6	19 17 1.71			S. 24 14		
	h ^s Sagittarii	4½	19 28 11.56			25 11		
	Moon I. U.	10.6	19 51 24.18	128.20	66.62	23 10 2.2	+ 493.6	
	Moon I. L.	- -	20 16 41.84	124.76	65.65	21 23 57.2	565.9	
	σ Capricorni	5½	20 11 19.55			19 33		
	ρ Capricorni	5	20 20 52.98			S. 18 16		
8	σ Capricorni	5½	20 11 19.54			S. 19 33		
	ρ Capricorni	5	20 20 52.97			18 16		
	Moon I. U.	11.7	20 41 19.06	121.49	64.72	19 24 13.0	+ 630.2	
	Moon I. L.	- -	21 5 18.67	118.51	63.86	17 12 24.5	686.6	
	θ Capricorni	4	20 58 5.39			17 47		
	ι Capricorni	4½	21 14 27.81			S. 17 26		
9	θ Capricorni	4	20 58 5.38			S. 17 47		
	ι Capricorni	4½	21 14 27.80			17 26		
	Moon I. U.	12.7	21 28 44.75	115.91	63.10	14 50 5.4	+ 735.3	
	Moon I. L.	- -	21 51 42.30	113.77	62.48	12 18 47.2	776.5	
	δ Capricorni	3	21 39 19.61			16 46		
	ι Aquarii -	4	21 58 53.38			S. 14 33		
10	δ Capricorni	3	21 39 19.61			S. 16 46		
	ι Aquarii -	4	21 58 53.38			14 33		
	Moon I. U.	13.7	22 14 17.16	112.13	62.00	9 39 58.3	+ 810.4	
	Moon I. L.	- -	22 36 35.65	111.05	61.67	6 55 5.6	837.1	
	κ Aquarii -	5	22 30 31.28			4 57		
	λ Aquarii -	4	22 45 19.53			S. 8 19		
11	κ Aquarii -	5	22 30 31.28			S. 4 57		
	λ Aquarii -	4	22 45 19.54			8 19		
	Moon I. U.	14.8	22 58 44.54	110.54	61.53	S. 4 5 36.4	+ 856.5	
	γ Piscium -	4	23 9 55.46			N. 2 31		
12	κ Piscium -	4½	23 19 46.37			N. 0 29		
	γ Piscium -	4	23 9 55.46			N. 2 31		
	κ Piscium -	4½	23 19 46.37			N. 0 29		

MOON-CULMINATING STARS, 1859. 451

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. per mer.	Declination.	Var. of C's Dec. in 1 hour of Long.	
Sept. 12	Moon II. L.	- -	^h ^m ^s 23 22 54.06	^s 110.65	^s 61.56	[°] ['] ["] S. 1 12 57.8	["] +868.7	
	Moon II. U.	15.8	23 45 5.84	111.41	61.77	1 41 21.5	873.3	
	d Piscium *	5½	0 13 24.67			S. 7 25		
	45 Piscium *	6	0 18 29.82			N. 6 55		
	13 d Piscium *	5½	0 13 24.68			N. 7 25		
	45 Piscium *	6	0 18 29.83			6 55		
	Moon II. L.	- -	0 7 30.55	112.82	62.18	4 35 49.0	+870.0	
	Moon II. U.	16.8	0 30 16.03	114.88	62.77	7 28 47.7	858.4	
	δ Piscium *	4½	0 41 26.17			6 49		
	ε Piscium *	4	0 55 41.68			N. 7 8		
14	δ Piscium *	4½	0 41 26.19			N. 6 49		
	ε Piscium *	4	0 55 41.70			7 8		
	Moon II. L.	- -	0 53 30.20	117.60	63.55	10 18 34.3	+837.8	
	Moon II. U.	17.9	1 17 20.96	120.97	64.51	13 3 17.4	807.7	
	β Arietis - -	2½	1 46 55.41			20 7		
	B.A.C. 607 -	6	1 51 50.65			N. 20 22		
	15 β Arietis - -	2½	1 46 55.43			N. 20 7		
	B.A.C. 607 -	6	1 51 50.67			20 22		
	Moon II. L.	- -	1 41 56.01	124.98	65.63	15 40 56.6	+767.0	
	Moon II. U.	18.9	2 7 22.53	129.53	66.89	18 9 20.2	715.0	
16	40 Arietis - -	6	2 40 42.07			17 42		
	47 Arietis - -	6	2 50 5.45			N. 20 6		
	40 Arietis - -	6	2 40 42.10			N. 17 42		
	47 Arietis - -	6	2 50 5.48			20 6		
	Moon II. L.	- -	2 33 46.63	134.55	68.25	20 26 6.8	+650.6	
	Moon II. U.	19.9	3 1 12.96	139.87	69.67	22 28 43.6	573.2	
	17 Tauri - -	4	3 36 34.50			23 40		
	27 Tauri - -	4	3 40 50.89			N. 23 37		
	17 17 Tauri - -	4	3 36 34.53			N. 23 40		
	27 Tauri - -	4	3 40 50.92			23 37		
17	Moon II. L.	- -	3 29 43.73	145.25	71.08	24 14 30.6	+482.3	
	Moon II. U.	21.0	3 59 18.18	150.43	72.41	25 40 44.7	377.8	
	ν Tauri - -	4½	4 17 56.24			22 30		
	τ Tauri - -	4½	4 33 50.85			N. 22 41		
	18 ν Tauri - -	4½	4 17 56.27			N. 22 30		
	τ Tauri - -	4½	4 33 50.88			22 41		
	Moon II. L.	- -	4 29 51.76	155.05	73.59	26 44 46.7	+260.5	
	Moon II. U.	22.0	5 1 15.79	158.78	74.53	27 24 12.3	+132.1	
	β Tauri - -	2	5 17 26.50			28 29		
	ζ Tauri - -	3½	5 29 16.66			N. 21 3		
19	β Tauri - -	2	5 17 26.53			N. 28 29		
	ζ Tauri - -	3½	5 29 16.70			21 3		
	Moon II. L.	- -	5 33 17.80	161.33	75.16	27 37 3.2	- 4.8	
	Moon II. U.	23.0	6 5 42.34	162.51	75.46	27 21 58.4	-146.5	
	μ Geminor.	3	6 14 29.06			22 35		
	ε Geminor.	3½	6 35 18.66			N. 25 16		

452 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of 's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of 's R.A. in 1 hour of Long.	Sidereal Time of 's Sem. pas. mer.	Declination.		
Sept. 20	μ Geminor.	3	h m s			° ' "		
	ε Geminor.	3½	6 14 29.10			N. 22 35		
	Moon II. L.	- -	6 35 18.70	162.26	75.40	25 16	- 289.0	
	Moon II. U.	24.1	7 10 31.47	160.71	75.01	26 38 24.1	427.9	
	ν Geminor.	4½	7 27 16.88			25 26 37.0		
	κ Geminor.	3½	7 35 58.77			27 12		
						N. 24 44		
	21 ν Geminor.	4½	7 27 16.91			N. 27 12		
	κ Geminor.	3½	7 35 58.80			24 44		
	Moon II. L.	- -	7 42 25.23	158.10	74.36	23 47 45.3	- 559.1	
	Moon II. U.	25.1	8 13 42.95	154.76	73.51	21 43 43.0	679.2	
	η Cancri - -	6	8 24 35.57			20 55		
	γ Cancri - -	4½	8 35 9.84			N. 21 58		
	22 Moon II. L.	- -	8 44 18.03	151.05	72.56	N. 19 17 0.3	- 785.4	
	Moon II. U.	26.1	9 14 8.11	147.32	71.58	16 30 37.1	875.7	
	23 Moon II. L.	- -	9 43 14.56	143.83	70.66	N. 13 27 50.9	- 949.0	
	Moon II. U.	27.2	10 11 41.67	140.79	69.86	10 12 11.4	1004.5	
	24 Moon II. L.	- -	10 39 35.82	138.35	69.19	N. 6 47 14.7	- 1041.9	
	Moon II. U.	28.2	11 7 4.92	136.62	68.72	N. 3 16 38.2	1061.2	
	25 Moon II. L.	- -	11 34 17.47	135.60	68.43	S. 0 16 3.0	- 1062.7	
	Moon II. U.	29.3	12 1 22.26	135.31	68.35	3 47 17.9	1047.0	
	26 Moon I. L.	- -	12 26 10.80	135.68	68.45	S. 7 13 43.8	- 1014.6	
27 Moon I. U.	0.9	12 53 24.13	136.65	68.71	S. 10 32 6.4	- 966.6		
Moon I. L.	- -	13 20 52.26	138.12	69.11	13 39 23.1	903.8		
28 Moon I. U.	2.0	13 48 40.35	139.95	69.62	S. 16 32 45.2	- 827.7		
Moon I. L.	- -	14 16 51.67	141.96	70.16	19 9 40.3	739.6		
29 Moon I. U.	3.0	14 45 27.20	143.94	70.70	S. 21 27 54.1	- 641.1		
Moon I. L.	- -	15 14 25.30	145.68	71.17	23 25 33.6	534.3		
30	20 Libræ - -	3½	14 55 51.69			S. 24 44		
	♈ Libræ - -	4½	15 4 13.69			19 15		
	Moon I. U.	4.0	15 43 41.68	146.96	71.52	25 1 11.7	- 421.2	
	Moon I. L.	- -	16 13 9.67	147.58	71.71	26 13 46.8	304.3	
	σ Scorprii - -	3½	16 12 40.06			25 15		
	α Scorprii - -	1½	16 20 48.44			S. 26 7		
Oct. 1	σ Scorprii - -	3½	16 12 40.05			S. 25 15		
	α Scorprii - -	1½	16 20 48.43			26 7		
	Moon I. U.	5.1	16 42 40.44	147.41	71.69	27 2 48.4	- 186.0	
	Moon I. L.	- -	17 12 4.11	146.39	71.45	27 28 15.3	- 68.8	
	θ Ophiuchi -	3½	17 13 24.16			24 51		
	δ Ophiuchi -	4	17 18 24.32			S. 29 44		
	2 θ Ophiuchi -	3½	17 13 24.15			S. 24 51		
	δ Ophiuchi -	4	17 18 24.30			29 44		
	Moon I. U.	6.1	17 41 10.43	144.53	71.00	27 30 33.7	+ 45.0	
	Moon I. L.	- -	18 9 49.87	141.93	70.34	27 10 36.6	+ 153.5	
	♐ Sagittarii	3½	18 12 1.58			S. 29 53		

MOON-CULMINATING STARS, 1859. 453

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Oct. 2	λ Sagittarii	3	^h 18 ^m 19 ^s 19.62	"	"	S. 25 30	"	
3	δ Sagittarii	3½	18 12 1.56			S. 29 53		
	λ Sagittarii	3	18 19 19.60			25 30		
	Moon I. U.	7.2	18 37 54.43	138.75	69.52	26 29 37.4	+255.2	
	Moon I. L.	- -	19 5 18.21	135.17	68.57	25 29 3.0	349.2	
	σ Sagittarii	2½	18 46 35.03			26 28		
	τ Sagittarii	3½	18 58 11.87			S. 27 52		
4	σ Sagittarii	2½	18 46 35.01			S. 26 28		
	τ Sagittarii	3½	18 58 11.85			27 52		
	Moon I. U.	8.2	19 31 57.64	131.39	67.57	24 10 30.0	+434.9	
	Moon I. L.	- -	19 57 51.51	127.60	66.53	22 35 39.1	512.2	
	ω Sagittarii	5	19 47 15.90			26 40		
	A Sagittarii	5	19 50 25.41			S. 26 34		
5	ω Sagittarii	5	19 47 15.88			S. 26 40		
	A Sagittarii	5	19 50 25.40			26 34		
	Moon I. U.	9.2	20 23 0.77	123.98	65.53	20 46 10.3	+581.3	
	Moon I. L.	- -	20 47 28.10	120.64	64.59	18 43 40.8	642.4	
	21 Capricorni	6	20 52 59.48			18 4		
	θ Capricorni	4	20 58 5.12			S. 17 47		
6	21 Capricorni	6	20 52 59.46			S. 18 4		
	θ Capricorni	4	20 58 5.11			17 47		
	Moon I. U.	10.3	21 11 17.64	117.70	63.74	16 29 44.2	+695.8	
	Moon I. L.	- -	21 34 34.68	115.23	63.01	14 5 49.7	742.1	
	γ Capricorni	3½	21 32 20.66			17 18		
	δ Capricorni	3	21 39 19.42			S. 16 46		
7	γ Capricorni	3½	21 32 20.65			S. 17 18		
	δ Capricorni	3	21 39 19.41			16 46		
	Moon I. U.	11.3	21 57 25.24	113.29	62.44	11 33 22.1	+781.4	
	Moon I. L.	- -	22 19 55.95	111.93	62.01	8 53 43.5	813.9	
	θ Aquarii -	4½	22 9 27.54			8 29		
	σ Aquarii -	4½	22 23 15.05			S. 11 24		
8	θ Aquarii -	4½	22 9 27.53			S. 8 29		
	σ Aquarii -	4½	22 23 15.05			11 24		
	Moon I. U.	12.3	22 42 13.86	111.16	61.77	6 8 14.9	+839.7	
	Moon I. L.	- -	23 4 26.34	111.03	61.70	3 18 17.4	858.7	
	φ Aquarii -	4½	23 7 5.39			S. 6 48		
	κ Piscium -	4½	23 19 46.42			N. 0 29		
9	φ Aquarii -	4½	23 7 5.38			S. 6 48		
	κ Piscium -	4½	23 19 46.42			N. 0 29		
	Moon I. U.	13.4	23 26 41.00	111.53	61.82	S. 0 25 14.8	+870.5	
	Moon I. L.	- -	23 49 5.62	112.69	62.13	N. 2 29 24.7	874.8	
	22 Piscium -	6	23 44 49.12			2 9		
	ω Piscium *	4	23 52 8.53			N. 6 5		
10	22 Piscium -	6	23 44 49.12			N. 2 9		
	ω Piscium *	4	23 52 8.53			6 5		
	Moon I. U.	14.4	0 11 48.16	114.51	62.63	N. 5 24 6.8	+870.9	

54 MOON-CULMINATING STARS, 1859

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Oct. 10	Moon I. L.	-	h m s 0 34 56.61	117° 00	63° 32	N. 8 17 9.5	+858.0	
	B.A.C. 149 *	6	0 28 41.76			12 27		
	♂ Piscium *	4½	0 41 26.43			N. 6 49		
11	B.A.C. 149 *	6	0 28 41.77			N. 12 27		
	♂ Piscium *	4½	0 41 26.43			6 49		
	Moon I. U.	15.4	0 58 38.88	120° 15	64° 19	11 6 39.8	+835.3	
	Moon II. L.	-	1 25 13.22	124° 11	65° 23	13 50 34.6	801.9	
	♂ Piscium -	5	1 18 43.92			18 27		
	♂ Piscium -	3½	1 24 0.89			N. 14 38		
12	♂ Piscium -	5	1 18 43.93			N. 18 27		
	♂ Piscium -	3½	1 24 0.90			14 38		
	Moon II. U.	16.4	1 50 28.22	128° 48	66° 41	16 26 38.9	+756.7	
	Moon II. L.	-	2 16 38.47	133° 30	67° 70	18 52 25.6	698.8	
	♂ Arietis -	2	1 59 18.41			22 48		
	♂ Arietis -	5½	2 4 59.27			N. 20 33		
13	♂ Arietis -	2	1 59 18.43			N. 22 48		
	♂ Arietis -	5½	2 4 59.29			20 33		
	Moon II. U.	17.5	2 43 48.63	138° 44	69° 07	21 5 16.4	+627.4	
	♂ Arietis -	4½	3 3 38.82			19 12		
	♂ Arietis -	4½	3 6 52.63			N. 20 31		
	14	♂ Arietis -	4½	3 3 38.83			N. 19 12	
♂ Arietis -		4½	3 6 52.65			20 31		
Moon II. L.		-	3 12 1.12	143° 65	70° 43	23 2 27.0	+542.0	
	Moon II. U.	18.5	3 41 15.41	148° 68	71° 74	24 41 8.8	442.7	
	♂ Tauri -	4½	4 17 57.02			22 30		
	♂ Tauri -	4½	4 33 51.66			N. 22 41		
15	♂ Tauri -	4½	4 17 57.04			N. 22 30		
	♂ Tauri -	4½	4 33 51.69			22 41		
	Moon II. L.	-	4 11 27.37	153° 20	72° 90	25 58 40.4	+330.5	
	Moon II. U.	19.5	4 42 28.89	156° 88	73° 85	26 52 35.3	206.9	
	♂ Tauri -	2	5 17 27.39			28 29		
	♂ Tauri -	3½	5 29 17.52			N. 21 3		
16	♂ Tauri -	2	5 17 27.43			N. 28 29		
	♂ Tauri -	3½	5 29 17.55			21 3		
	Moon II. L.	-	5 14 7.92	159° 41	74° 50	27 20 53.2	+ 74.8	
	Moon II. U.	20.6	5 46 9.56	160° 62	74° 84	27 22 11.2	- 62.4	
	♂ Geminor.	3½	6 6 26.17			22 33		
	♂ Geminor.	3	6 14 29.95			N. 22 35		
17	♂ Geminor.	3½	6 6 26.20			N. 22 33		
	♂ Geminor.	3	6 14 29.99			22 35		
	Moon II. L.	-	6 18 17.17	160° 41	74° 82	26 55 52.2	-200.6	
	Moon II. U.	21.6	6 50 14.27	158° 90	74° 48	26 2 7.5	-336.0	
	♂ Geminor.	4½	7 27 17.79			27 12		
	♂ Geminor.	1½	7 36 44.84			N. 28 22		
18	♂ Geminor.	4½	7 27 17.82			N. 27 12		
	♂ Geminor.	1½	7 36 44.87			N. 28 22		

MOON-CULMINATING STARS, 1859. 455

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Oct. 18	Moon II. L.	- -	^h ^m ^s 7 21 46.43	156.30	73.86	N. 24 41 55.9	- 464.5	
	Moon II. U.	22.7	7 52 42.49	152.94	73.04	22 56 57.5	583.3	
	θ Cancri - -	6	8 23 36.49			18 34		
	δ Cancri - -	4	8 36 43.36			N. 18 40		
19	θ Cancri - -	6	8 23 36.52			N. 18 34		
	δ Cancri - -	4	8 36 43.39			18 40		
	Moon II. L.	- -	8 22 55.35	149.17	72.09	20 49 24.8	- 690.0	
	Moon II. U.	23.7	8 52 22.15	145.31	71.11	18 21 52.6	783.0	
83	Cancri - -	6	9 11 9.38			18 18		
	ο Leonis - *	3½	9 33 40.35			N. 10 32		
	20	83 Cancri - -	6	9 11 9.41			N. 18 18	
		ο Leonis - *	3½	9 33 40.38			10 32	
Moon II. L.		- -	9 21 3.67	141.67	70.16	15 37 10.2	- 861.6	
Moon II. U.		24.7	9 49 3.85	138.45	69.30	12 38 14.7	925.2	
α	Leonis - *	1½	10 0 54.22			12 39		
	ρ Leonis - *	4	10 25 25.57			N. 10 2		
	21	α Leonis - *	1½	10 0 54.24			N. 12 39	
		ρ Leonis - *	4	10 25 25.60			10 2	
Moon II. L.		- -	10 16 28.89	135.83	68.59	9 28 6.5	- 973.6	
Moon II. U.		25.8	10 43 26.53	133.90	68.04	N. 6 9 48.0	1006.9	
22	Moon II. L.	- -	11 10 5.51	132.73	67.70	N. 2 46 20.9	- 1025.1	
	Moon II. U.	26.8	11 36 34.97	132.31	67.55	S. 0 39 12.4	1028.0	
23	Moon II. L.	- -	12 3 4.04	132.66	67.60	S. 4 3 49.3	- 1015.6	
	Moon II. U.	27.9	12 29 41.52	133.70	67.85	7 24 27.4	988.2	
24	Moon II. L.	- -	12 56 35.33	135.37	68.26	S. 10 38 5.8	- 945.7	
	Moon II. U.	28.9	13 23 52.31	137.54	68.81	13 41 45.7	888.5	
25	Moon II. L.	- -	13 51 37.59	140.05	69.45	S. 16 32 33.5	- 817.2	
26	Moon I. U.	0.5	14 17 33.89	142.60	70.14	S. 19 7 44.4	- 732.5	
	Moon I. L.	- -	14 46 20.84	145.19	70.80	21 24 46.9	636.0	
27	Moon I. U.	1.5	15 15 37.07	147.44	71.39	S. 23 21 28.6	- 529.4	
	Moon I. L.	- -	15 45 17.04	149.10	71.83	24 56 1.5	415.0	
28	Moon I. U.	2.5	16 15 12.36	149.96	72.07	S. 26 7 8.9	- 295.6	
	Moon I. L.	- -	16 45 12.25	149.85	72.07	26 54 8.1	174.2	
29	Moon I. U.	3.6	17 15 4.71	148.72	71.82	S. 27 16 53.1	- 53.8	
	Moon I. L.	- -	17 44 37.57	146.60	71.32	27 15 53.9	+ 62.8	
γ	Sagittarii	4	17 56 4.13			29 35		
	μ	4	18 5 22.69			S. 21 6		
30	γ	4	17 56 4.12			S. 29 35		
	μ	4	18 5 22.68			21 6		
	Moon I. U.	4.6	18 13 39.71	143.63	70.60	26 52 10.6	+ 173.2	
	Moon I. L.	- -	18 42 2.10	140.01	69.70	26 7 8.1	+ 275.7	
ρ	Sagittarii	3½	18 36 54.00			27 8		
	σ	2½	18 46 34.58			S. 26 28		
31	ρ	3½	18 36 53.99			S. 27 8		

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Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
			^h ^m ^s	^s	^s	[°] ['] ["]	["]	
Oct. 31	♈ Sagittarii	2½	18 46 34.57			S. 26 28		
	Moon I. U.	5.6	19 9 38.34	135.98	68.68	25 2 28.1	+369.3	
	Moon I. L.	-	19 36 24.98	131.78	67.60	23 40 1.1	453.6	
	♋ Sagittarii	4½	19 28 10.69			25 11		
	♌ Sagittarii	5	19 38 11.40			S. 20 6		
Nov. 1	♋ Sagittarii	4½	19 28 10.67			S. 25 11		
	♌ Sagittarii	5	19 38 11.39			20 6		
	Moon I. U.	6.7	20 2 21.23	127.62	66.50	22 1 39.2	+528.5	
	Moon I. L.	-	20 27 28.72	123.68	65.44	20 9 12.3	594.5	
	♊ Capricorni	3	20 13 8.51			15 13		
	♋ Capricorni	5	20 20 52.22			S. 18 16		
	♊ Capricorni	3	20 13 8.50			S. 15 13		
	♋ Capricorni	5	20 20 52.20			18 16		
	Moon I. U.	7.7	20 51 51.10	120.12	64.46	18 4 24.7	+652.1	
	Moon I. L.	-	21 15 33.38	117.02	63.60	15 48 52.8	702.0	
	♊ Aquarii	4½	21 1 58.07			11 56		
	♋ Capricorni	4½	21 14 27.18			S. 17 26		
	♊ Aquarii	4½	21 1 58.06			S. 11 56		
	♋ Capricorni	4½	21 14 27.16			17 26		
	Moon I. U.	8.8	21 38 41.80	114.48	62.87	13 24 5.4	+744.8	
	Moon I. L.	-	22 1 23.26	112.54	62.30	10 51 24.9	780.9	
Nov. 2	♊ Aquarii	4	21 58 52.90			14 33		
	♋ Aquarii	4½	22 9 27.24			S. 8 29		
	♊ Aquarii	4	21 58 52.89			S. 14 33		
	♋ Aquarii	4½	22 9 27.24			8 29		
	Moon I. U.	9.8	22 23 45.27	111.24	61.91	8 12 8.7	+810.8	
	Moon I. L.	-	22 45 55.70	110.61	61.71	5 27 31.3	834.5	
	♊ Aquarii	4	22 45 19.25			8 20		
	♋ Aquarii	6	22 57 52.75			S. 8 27		
	♊ Aquarii	4	22 45 19.24			S. 8 20		
	♋ Aquarii	6	22 57 52.74			8 27		
	Moon I. U.	10.8	23 8 2.65	110.67	61.70	S. 2 38 46.0	+852.0	
	Moon I. L.	-	23 30 14.53	111.43	61.89	N. 0 12 50.7	863.0	
	♋ Piscium	4½	23 19 46.25			0 29		
	♌ Piscium	5	23 34 55.17			N. 1 0		
Nov. 3	♋ Piscium	4½	23 19 46.24			N. 0 29		
	♌ Piscium	5	23 34 55.16			1 0		
	Moon I. U.	11.8	23 52 39.90	112.92	62.28	3 5 58.3	+867.1	
	Moon I. L.	-	0 15 27.47	115.13	62.88	5 59 8.7	863.3	
	♌ Piscium *	5½	0 13 24.81			7 24		
	♋ Piscium *	6	0 18 29.99			N. 6 55		
	♌ Piscium *	5½	0 13 24.81			N. 7 24		
	♋ Piscium *	6	0 18 29.98			6 55		
	Moon I. U.	12.9	0 38 46.03	118.08	63.67	8 50 42.3	+850.8	
	Moon I. L.	-	1 2 44.30	121.75	64.65	11 38 47.4	+828.3	
Nov. 4	♋ Piscium *	4	0 55 42.05			7 8		
	♌ Piscium *	4½	1 6 26.40			N. 6 50		

MOON-CULMINATING STARS, 1859. 457

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
			h m s	"	"	° ' "	"
Nov. 8	♌ Piscium *	4	0 55 42.05			N. 7 8	
	♌ Piscium *	4½	1 6 26.40			6 50	
	Moon I. u.	13.9	1 27 30.66	126.09	65.81	14 21 17.2	+794.6
	Moon I. L.	- -	1 53 12.85	131.04	67.11	16 55 48.0	748.3
	♈ Arietis - -	2½	1 46 56.07			20 7	
	B.A.C. 607 -	6	1 51 51.34			N.20 22	
9	♈ Arietis - -	2½	1 46 56.07			N.20 7	
	B.A.C. 607 -	6	1 51 51.34			20 22	
	Moon I. u.	14.9	2 19 57.39	136.45	68.52	19 19 39.5	+687.9
	Moon I. L.	- -	2 47 48.78	142.14	69.98	21 29 56.9	612.4
	♈ Arietis - -	4½	3 3 39.23			19 12	
	♌ Arietis - -	4½	3 6 53.05			N.20 31	
10	♈ Arietis - -	4½	3 3 39.24			N.19 12	
	♌ Arietis - -	4½	3 6 53.06			20 31	
	Moon II. u.	16.0	3 19 11.57	148.06	71.41	23 23 35.6	+521.4
	♈ Tauri - -	3	3 39 11.60			23 40	
	A' Tauri - -	4½	3 56 26.93			N.21 42	
11	♈ Tauri - -	3	3 39 11.62			N.23 40	
	A' Tauri - -	4½	3 56 26.95			21 42	
	Moon II. L.	- -	3 49 20.68	153.37	72.75	24 57 29.3	+415.0
	Moon II. u.	17.0	4 20 29.33	157.91	73.89	26 8 39.6	294.5
	♊ Tauri - -	6	4 59 36.57			24 5	
	♌ Tauri - -	2	5 17 28.18			N.28 29	
12	♊ Tauri - -	6	4 59 36.59			N.24 5	
	♌ Tauri - -	2	5 17 28.21			28 29	
	Moon II. L.	- -	4 52 26.05	161.31	74.75	26 54 32.6	+162.6
	Moon II. u.	18.0	5 24 55.12	163.26	75.25	27 13 11.6	+ 22.9
	♊ Geminor.	3½	6 6 26.99			22 33	
	♌ Geminor.	3	6 14 30.79			N.22 35	
13	♊ Geminor.	3½	6 6 27.02			N.22 33	
	♌ Geminor.	3	6 14 30.81			22 35	
	Moon II. L.	- -	5 57 37.88	163.58	75.37	27 3 30.8	-119.9
	Moon II. u.	19.1	6 30 14.91	162.32	75.11	26 25 22.2	260.9
	♌ Geminor.	4	6 55 49.49			20 46	
	♈ Geminor.	3½	7 11 46.73			N.22 14	
14	♌ Geminor.	4	6 55 49.52			N.20 46	
	♈ Geminor.	3½	7 11 46.76			22 14	
	Moon II. L.	- -	7 2 28.10	159.67	74.51	25 19 35.5	-395.4
	Moon II. u.	20.1	7 34 2.76	155.97	73.65	23 47 51.9	519.8
	♊ Canceri - -	4	8 2 1.97			25 56	
	♌ Canceri - -	6	8 12 13.27			N.24 28	
15	♊ Canceri - -	4	8 2 2.00			N.25 56	
	♌ Canceri - -	6	8 12 13.30			24 28	
	Moon II. L.	- -	8 4 48.71	151.63	72.60	21 52 32.6	-631.1
	Moon II. u.	21.2	8 34 40.78	147.05	71.48	19 36 24.4	-727.7
	♈ Canceri - -	4	8 36 44.29			18 40	
	♌ Canceri - *	4	8 50 50.30			N.12 24	

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Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
Nov. 16	♂ Cancri - -	4	h m s	s	s	N. 18 40		
	α Cancri - *	4	8 36 44' 33			12 24		
	Moon II. L.	- -	9 3 38' 24	142' 58	70' 36	17 2 28' 0	-809' 0	
	Moon II. U.	22' 2	9 31 44' 20	138' 50	69' 32	14 13 48' 6	875' 0	
	π Leonis - *	5	9 52 49' 06			8 43		
	α Leonis - *	1½	10 0 55' 04			N. 12 39		
17	π Leonis - *	5	9 52 49' 09			N. 8 43		
	α Leonis - *	1½	10 0 55' 07			12 39		
	Moon II. L.	- -	9 59 4' 63	135' 02	68' 40	11 13 27' 7	-926' 0	
	Moon II. U.	23' 2	10 25 47' 48	132' 25	67' 66	8 4 21' 3	962' 7	
	c Leonis - *	5	10 53 29' 32			6 51		
	χ Leonis - *	5	10 57 47' 58			N. 8 6		
18	c Leonis - *	5	10 53 29' 35			N. 6 51		
	χ Leonis - *	5	10 57 47' 61			8 6		
	Moon II. L.	- -	10 52 1' 85	130' 28	67' 12	4 49 18' 4	-985' 5	
	Moon II. U.	24' 3	11 17 57' 53	129' 14	66' 79	N. 1 31 1' 8	995' 1	
	υ Leonis - -	4½	11 29 46' 63			S. 0 3		
	β Virginis -	3½	11 43 23' 87			N. 2 34		
19	υ Leonis - -	4½	11 29 46' 66			S. 0 3		
	β Virginis -	3½	11 43 23' 90			N. 2 34		
	Moon II. L.	- -	11 43 44' 54	128' 83	66' 67	S. 1 47 50' 5	-991' 5	
	Moon II. U.	25' 3	12 9 32' 68	129' 33	66' 77	5 4 42' 8	975' 1	
	28 Virginis -	6	12 34 43' 00			6 43		
	ψ Virginis -	5	12 47 3' 91			S. 8 46		
20	Moon II. L.	- -	12 35 31' 29	130' 57	67' 06	S. 8 17 0' 5	-945' 7	
	Moon II. U.	26' 3	13 1 48' 91	132' 48	67' 54	11 22 8' 7	903' 5	
21	Moon II. L.	- -	13 28 32' 91	134' 94	68' 15	S. 14 17 31' 7	-848' 2	
	Moon II. U.	27' 4	13 55 49' 01	137' 80	68' 85	17 0 33' 7	780' 0	
22	Moon II. L.	- -	14 23 40' 76	140' 85	69' 62	S. 19 28 41' 6	-699' 3	
	Moon II. U.	28' 4	14 52 9' 10	143' 85	70' 36	21 39 29' 1	606' 8	
23	Moon II. L.	- -	15 21 11' 86	146' 53	71' 03	S. 23 30 43' 0	-503' 9	
	Moon II. U.	29' 5	15 50 43' 52	148' 62	71' 54	25 0 28' 1	392' 4	
24	Moon I. L.	- -	16 18 11' 63	149' 83	71' 86	S. 26 7 17' 5	-275' 0	
	Moon I. U.	0' 9	16 48 12' 16	150' 08	71' 93	S. 26 50 16' 8	-154' 6	
25	Moon I. L.	- -	17 18 9' 04	149' 21	71' 72	27 9 9' 1	-34' 4	
	Moon I. U.	2' 0	17 47 48' 89	147' 25	71' 26	S. 27 4 15' 7	+82' 5	
26	Moon I. L.	- -	18 16 59' 34	144' 34	70' 55	26 36 33' 4	193' 3	
	Moon I. U.	3' 0	18 45 30' 07	140' 68	69' 65	S. 25 47 27' 5	+206' 1	
27	Moon I. L.	- -	19 13 13' 61	136' 52	68' 61	24 38 43' 9	389' 5	
	♂ Sagittarii	4	18 56 16' 77			S. 21 57		
28	π Sagittarii	3	19 1 25' 45			21 14		
	Moon I. U.	4' 1	19 40 5' 65	132' 14	67' 50	23 12 19' 9	+472' 8	
	Moon I. L.	- -	20 6 4' 93	127' 77	66' 37	21 30 16' 9	+546' 0	
	4 Capricorni	6	20 9 47' 41			S. 22 14		

MOON-CULMINATING STARS, 1859. 459

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem- pas. mer.	Declination.		
Nov. 28	♏ Capricorni	5	^h ^m ^s 20 20 51.88	"	"	S. 18 16	"	
29	♏ Capricorni	6	20 9 47.41			S. 22 14		
	♏ Capricorni	5	20 20 51.88			18 16		
	Moon I. U.	5.1	20 31 12.84	123.60	65.28	19 34 33.5	+609.6	
	Moon I. L.	- -	20 55 32.93	119.82	64.27	17 27 2.3	664.1	
21	♏ Capricorni	6	20 52 58.71			18 4		
	♏ Capricorni	4	20 58 4.36			S. 17 47		
30	♏ Capricorni	6	20 52 58.70			S. 18 4		
	♏ Capricorni	4	20 58 4.35			17 47		
	Moon I. U.	6.1	21 19 10.40	116.51	63.38	15 9 26.9	+710.5	
	Moon I. L.	- -	21 42 11.64	113.79	62.64	12 43 21.0	749.3	
	♏ Capricorni	3	21 39 18.70			16 46		
	♏ Capricorni	5	21 45 39.78			S. 14 13		
Dec. 1	♏ Capricorni	3	21 39 18.69			S. 16 46		
	♏ Capricorni	5	21 45 39.77			14 13		
	Moon I. U.	7.2	22 4 43.87	111.69	62.06	10 10 10.1	+781.4	
	Moon I. L.	- -	22 26 54.95	110.27	61.66	7 31 12.0	807.3	
	♏ Aquarii	4½	22 23 14.43			11 24		
	♏ Aquarii	5	22 30 30.62			S. 4 57		
2	♏ Aquarii	4½	22 23 14.42			S. 11 24		
	♏ Aquarii	5	22 30 30.61			4 57		
	Moon I. U.	8.2	22 48 53.08	109.54	61.46	4 47 39.1	+827.2	
	Moon I. L.	- -	23 10 46.77	109.53	61.46	2 0 41.5	841.4	
	♏ Aquarii	4½	23 7 4.89			S. 6 48		
	♏ Piscium	4½	23 19 45.97			N. 0 29		
3	♏ Aquarii	4½	23 7 4.88			S. 6 48		
	♏ Piscium	4½	23 19 45.96			N. 0 29		
	Moon I. U.	9.2	23 32 44.86	110.28	61.66	0 48 31.2	+849.7	
	Moon I. L.	- -	23 54 56.43	111.78	62.08	3 38 46.7	851.8	
26	Piscium *	6.	23 47 58.98			6 18		
	♏ Piscium *	4	23 52 8.20			N. 6 5		
4	26 Piscium *	6	23 47 58.97			N. 6 18		
	♏ Piscium *	4	23 52 8.19			6 5		
	Moon I. U.	10.2	0 17 30.81	114.08	62.71	6 28 45.7	+846.8	
	Moon I. L.	- -	0 40 37.42	117.16	63.55	9 16 59.3	834.0	
	♏ Piscium *	4½	0 41 26.29			6 49		
	♏ Piscium *	4	0 55 41.92			N. 7 8		
5	♏ Piscium *	4½	0 41 26.29			N. 6 49		
	♏ Piscium *	4	0 55 41.91			7 8		
	Moon I. U.	11.3	1 4 25.83	121.04	64.60	12 1 45.9	+812.1	
	Moon I. L.	- -	1 29 5.43	125.69	65.84	14 41 7.0	779.5	
94	Piscium -	5	1 19 9.51			18 31		
	♏ Piscium -	3½	1 24 0.96			N. 14 38		
6	94 Piscium -	5	1 19 9.50			N. 18 31		
	♏ Piscium -	3½	1 24 0.96			14 38		
	Moon I. U.	12.3	1 54 45.11	131.04	67.23	N. 17 12 45.6	+734.7	

460 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
Dec. 6	Moon I. L.	- -	h m s				
	θ Arietis - -	5½	2 21 32.62	136.97	68.75	N.19 34 3.6	+675.8
	ν Arietis - -	5½	2 10 22.12			19 15	
	ν Arietis - -	5½	2 30 53.94			N.21 21	
7	θ Arietis - -	5½	2 10 22.12			N.19 15	
	ν Arietis - -	5½	2 30 53.94			21 21	
	Moon I. U.	13.3	2 49 33.74	143.27	70.34	21 42 3.1	+601.3
	Moon I. L.	- -	3 18 51.37	149.65	71.93	23 33 29.6	510.2
	δ Arietis - -	4½	3 3 39.42			19 12	
	ζ Arietis - -	4½	3 6 53.25			N.20 31	
8	δ Arietis - -	4½	3 3 39.42			N.19 12	
	ζ Arietis - -	4½	3 6 53.25			20 31	
	Moon I. U.	14.4	3 49 24.17	155.73	73.40	25 5 0.3	+402.1
	Moon I. L.	- -	4 21 5.67	161.03	74.67	26 13 17.0	278.1
	ν Tauri - -	4½	4 17 58.03			22 30	
	τ Tauri - -	4½	4 33 52.76			N.22 41	
9	ν Tauri - -	4½	4 17 58.04			N.22 30	
	τ Tauri - -	4½	4 33 52.77			22 41	
	Moon I. U.	15.4	4 53 43.83	165.08	75.64	26 55 21.5	+140.7
	β Tauri - -	2	5 17 28.77			28 29	
	χ Aurigæ - -	5	5 23 38.91			N.32 5	
10	β Tauri - -	2	5 17 28.79			N.28 29	
	χ Aurigæ - -	5	5 23 38.92			32 5	
	Moon II. L.	- -	5 29 33.60	167.56	76.20	27 8 57.0	- 6.0
	Moon II. U.	16.4	6 3 9.21	168.04	76.33	26 52 43.6	156.4
	η Geminor.	3½	6 6 27.67			22 33	
	μ Geminor.	3	6 14 31.49			N.22 35	
11	η Geminor.	3½	6 6 27.69			N.22 33	
	μ Geminor.	3	6 14 31.51			22 35	
	Moon II. L.	- -	6 36 39.34	166.67	76.04	26 6 30.8	-304.8
	Moon II. U.	17.5	7 9 42.92	163.68	75.36	24 51 19.2	445.3
	ν Geminor.	4½	7 27 19.60			27 12	
	κ Geminor.	3½	7 36 1.45			N.24 44	
12	ν Geminor.	4½	7 27 19.63			N.27 12	
	κ Geminor.	3½	7 36 1.48			24 44	
	Moon II. L.	- -	7 42 2.80	159.47	74.37	23 9 13.0	-573.2
	Moon II. U.	18.5	8 13 27.33	154.54	73.20	21 3 3.7	685.4
	η Cancrī - -	6	8 24 38.21			20 55	
	δ Cancrī - -	4	8 36 45.18			N.18 40	
13	η Cancrī - -	6	8 24 38.24			N.20 55	
	δ Cancrī - -	4	8 36 45.21			18 40	
	Moon II. L.	- -	8 43 50.57	149.34	71.95	18 36 14.3	-779.8
	Moon II. U.	19.6	9 13 11.91	144.28	70.71	15 52 20.6	-856.1
	ν Leonis - *	5	9 50 42.54			13 7	
	α Leonis - *	1½	10 0 55.95			N.12 39	
14	ν Leonis - *	5	9 50 42.57			N.13 7	
	α Leonis - *	1½	10 0 55.98			N.12 39	

MOON-CULMINATING STARS, 1859. 461

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. per mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
Dec. 14	Moon I.L.	-	h m s	s	s	° ' "	"
	Moon II.U.	20.6	9 41 34.93	139.66	69.55	N. 12 54 59.3	-914.6
	44 Leonis - *	6	10 9 6.37	135.70	68.55	9 47 38.6	956.2
	ρ Leonis - *	4	10 17 53.45			9 30	
	ρ Leonis - *	4	10 25 27.30			N. 10 1	
	44 Leonis - *	6	10 17 53.48			N. 9 30	
	ρ Leonis - *	4	10 25 27.33			10 1	
	Moon II.L.	-	10 35 54.91	132.53	67.73	6 33 33.6	-982.2
	Moon II.U.	21.7	11 2 10.47	130.21	67.12	N. 3 15 44.4	993.7
	φ Leonis - -	4½	11 9 33.39			S. 2 53	
	ν Leonis - -	4½	11 29 47.51			S. 0 3	
	φ Leonis - -	4½	11 9 33.42			S. 2 53	
	ν Leonis - -	4½	11 29 47.55			0 3	
	Moon II.L.	-	11 28 3.42	128.76	66.73	0 3 1.7	-991.9
	Moon II.U.	22.7	11 53 44.23	128.18	66.57	3 20 10.1	977.5
	f Virginis -	6	12 29 35.20			5 4	
	γ' Virginis -	2½	12 34 34.34			S. 0 41	
	f Virginis -	6	12 29 35.23			S. 5 4	
	γ' Virginis -	2½	12 34 34.37			0 41	
	Moon II.L.	-	12 19 23.07	128.43	66.62	6 33 14.7	-951.3
	Moon II.U.	23.7	12 45 9.52	129.44	66.87	9 39 55.3	913.6
	53 Virginis -	5	13 4 36.74			15 26	
	α Virginis -	1	13 17 49.26			S. 10 26	
	53 Virginis -	5	13 4 36.78			S. 15 26	
	α Virginis -	1	13 17 49.29			10 26	
	Moon II.L.	-	13 11 12.31	131.13	67.30	12 37 55.6	-864.6
	Moon II.U.	24.8	13 37 38.92	133.39	67.86	15 25 1.6	804.5
	B.A.C. 4700	5½	14 3 11.68			15 38	
	λ Virginis -	4½	14 11 32.17			S. 12 43	
	B.A.C. 4700	5½	14 3 11.71			S. 15 38	
	λ Virginis -	4½	14 11 32.20			12 43	
	Moon II.L.	-	14 4 35.25	136.05	68.53	17 59 0.7	-733.5
	Moon II.U.	25.8	14 32 5.11	138.94	69.25	20 17 43.0	651.8
	20 Libræ - -	3½	14 55 52.61			24 44	
	γ Libræ - -	4½	15 4 14.52			S. 19 15	
	Moon II.L.	-	15 0 9.82	141.82	69.95	S. 22 19 3.5	-560.0
	Moon II.U.	26.8	15 28 47.73	144.43	70.58	24 1 6.7	459.1
	Moon II.L.	-	15 57 54.05	146.51	71.07	S. 25 22 11.9	-350.7
	Moon II.U.	27.9	16 27 20.87	147.81	71.37	26 21 0.8	236.8
	Moon II.L.	-	16 56 57.71	148.15	71.44	S. 26 56 42.8	-120.0
	Moon II.U.	28.9	17 26 32.33	147.43	71.25	27 9 0.4	3.2
	Moon II.L.	-	17 55 52.00	145.67	70.80	S. 26 58 10.4	+110.8
	Moon I.U.	0.3	18 22 24.47	143.10	70.11	S. 26 25 3.5	+219.2
	Moon I.L.	-	18 50 41.69	139.67	69.24	25 30 58.8	320.1
	Moon I.U.	1.3	19 18 14.42	135.72	68.23	S. 24 17 37.5	+411.8
	Moon I.L.	-	19 44 57.88	131.50	67.15	S. 22 46 53.9	+493.7

462 MOON-CULMINATING STARS, 1859.

Month and Day.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
Dec. 26	Moon I. u.	2.3	^h 20 ^m 10 ^s 50.19	^h 127.24	^m 66.05	S. 21 0 49.1	+565.4
	Moon I. L.	-	20 35 52.19	123.14	64.97	19 1 24.1	627.1
27	Moon I. u.	3.4	21 0 6.83	119.37	63.97	S. 16 50 35.5	+679.5
	Moon I. L.	-	21 23 38.75	116.04	63.09	14 30 11.9	723.1
28	Capricorni	4½	21 14 26.62			S. 17 26	
	γ Capricorni	3½	21 32 19.71			17 18	
29	Moon I. u.	4.4	21 46 33.86	113.25	62.34	12 1 53.5	+758.7
	Moon I. L.	-	22 8 58.99	111.05	61.75	9 27 11.3	787.2
30	θ Aquarii -	4½	22 9 26.65			8 29	
	ρ Aquarii -	5½	22 12 49.89			S. 8 32	
31	θ Aquarii -	4½	22 9 26.65			S. 8 29	
	ρ Aquarii -	5½	22 12 49.89			8 32	
32	Moon I. u.	5.4	22 31 1.56	109.49	61.35	6 47 27.9	+809.0
	Moon I. L.	-	22 52 49.50	108.61	61.13	4 3 59.8	824.7
33	82 Aquarii -	6	22 55 16.63			7 19	
	φ Aquarii -	4½	23 7 4.62			S. 6 48	
34	82 Aquarii -	6	22 55 16.62			S. 7 19	
	φ Aquarii -	4½	23 7 4.61			6 48	
35	Moon I. u.	6.5	23 14 31.07	108.44	61.11	S. 1 17 58.7	+834.5
	Moon I. L.	-	23 36 14.86	108.99	61.29	N. 1 29 25.4	838.6
36	θ Piscium *	4½	23 20 52.35			5 36	
	λ Piscium -	5	23 34 54.63			N. 1 0	
37	θ Piscium *	4½	23 20 52.34			N. 5 36	
	λ Piscium -	5	23 34 54.62			1 0	
38	Moon I. u.	7.5	23 58 9.73	110.29	61.68	4 17 2.8	+836.6
	Moon I. L.	-	0 20 24.82	112.36	62.29	7 3 38.9	+828.3
39	d Piscium *	5½	0 13 24.33			7 24	
	45 Piscium *	6	0 18 29.52			N. 6 55	

In the Year 1859 there will be four Eclipses of the Sun, and two of the Moon.

L—A Partial Eclipse of the SUN, February 2, 1859, invisible at Greenwich.

ELEMENTS.				
	d	h	m	s
Greenwich Mean Time of ζ in R.A. Feb.	2	12	6	31.0
\odot 's and ζ 's Right Ascension - - - -	21	4	37.38	
ζ 's Declination - - - - - S.	18	15	20.7	
\odot 's Declination - - - - - S.	16	43	54.3	
ζ 's Horary Motion in R. A. - - - -	29	14.3		
\odot 's Horary Motion in R. A. - - - -	2	32.3		
ζ 's Horary Motion in Declination - - - N.	11	4.7		
\odot 's Horary Motion in Declination - - - N.	43.7			
ζ 's Equatorial Horizontal Parallax - -	54	12.6		
\odot 's Equatorial Horizontal Parallax - -	8.7			
ζ 's True Semidiameter - - - - -	14	48.3		
\odot 's True Semidiameter - - - - -	16	15.6		

Begins on the Earth generally February 2^d 13^h 4^m 5, Mean Time at Greenwich, in Longitude 58° 53' W. of Greenwich, and Latitude 66° 38' S.

Greatest Eclipse Feb. 2^d 13^h 22^m 2, Mag. (Sun's diameter = 1) 0.012, in Longitude 71° 51' W. of Greenwich, and Latitude 62° 36' S.

Ends on the Earth generally Feb. 2^d 13^h 39^m 9, in Longitude 82° 41' W. of Greenwich, and Latitude 58° 12' S.

This Eclipse is only visible in a small portion of the Southern Ocean above the parallel of Latitude 55°.

II.—A Total Eclipse of the MOON, Feb. 16–17, 1859, invisible at Greenwich.

ELEMENTS.				
	d	h	m	s
Greenwich Mean Time of \oint in R. A. Feb.	16	22	37	42.0
('s Right Ascension - - - - -		10	1	48.61
('s Declination - - - - -	N.	12	11	8.2
\odot 's Declination - - - - -	S.	12	4	47.5
('s Horary Motion in R. A. - - - - -		34	28.7	
\odot 's Horary Motion in R. A. - - - - -		2	25.1	
('s Horary Motion in Declination - - -	S.	16	6.9	
\odot 's Horary Motion in Declination - - -	N.		52.3	
('s Equatorial Horizontal Parallax - -		60	41.7	
\odot 's Equatorial Horizontal Parallax - -			8.7	
('s True Semidiameter - - - - -		16	34.6	
\odot 's True Semidiameter - - - - -		16	12.9	

	d	h	m	
First contact with the Penumbra Feb.	16	20	0.5	} Mean Time at Greenwich.
First contact with the Shadow - —	16	20	56.5	
Beginning of Total Phase - - —	16	21	54.1	
Middle of the Eclipse - - - —	16	22	42.5	
End of Total Phase - - - —	16	23	30.9	
Last contact with the Shadow - —	17	0	28.5	
Last contact with the Penumbra —	17	1	24.5	

At these times respectively the Moon will be in the Zenith of the places whose positions are,

Longitude	117° 57' W.	} of Greenwich.	Latitude	12° 58' N.
	131 27			12 43
	145 20			12 28
	157 0			12 15
	168 41 W.			12 1
	177 26 E.			11 46
	163 56 E.			11 30 N.

Magnitude of the Eclipse (Moon's diameter = 1) 1.693.

The first contact with the Shadow occurs at 121° from the Northernmost point of the Moon's limb towards the East.

The last contact at 69° towards the West; in each case, for *direct* image.

III.—A Partial Eclipse of the SUN, March 4, 1859, invisible at Greenwich.

ELEMENTS.					
		d	h	m	s
Greenwich Mean Time of ☉ in R.A. March 4		8	22	43	2
☉'s and ☾'s Right Ascension - - - -		23	0	11	01
☾'s Declination - - - - - S.		4	54	41	6
☉'s Declination - - - - - S.		6	23	22	7
☾'s Horary Motion in R.A. - - - -		27	33	9	
☉'s Horary Motion in R.A. - - - -		2	19	5	
☾'s Horary Motion in Declination - - N.		14	25	8	
☉'s Horary Motion in Declination - - N.		57	8		
☾'s Equatorial Horizontal Parallax - -		55	13	9	
☉'s Equatorial Horizontal Parallax - -		8	6		
☾'s True Semidiameter - - - - -		15	5	0	
☉'s True Semidiameter - - - - -		16	9	4	

Begins on the Earth generally March 4^d 5^h 38^m·1, Mean Time at Greenwich, in Longitude 166° 46' W. of Greenwich, and Latitude 36° 47' N.

Greatest Eclipse March 4^d 6^h 54^m·7, Mag. (Sun's diameter = 1) 0·249, in Longitude 178° 56' W. of Greenwich, and Latitude 61° 20' N.

Ends on the Earth generally March 4^d 8^h 11^m·2, in Longitude 146° 30' W. of Greenwich, and Latitude 82° 54' N.

The limiting lines of this Eclipse, in the diagram in the next page, have been laid down from the following calculated positions:—

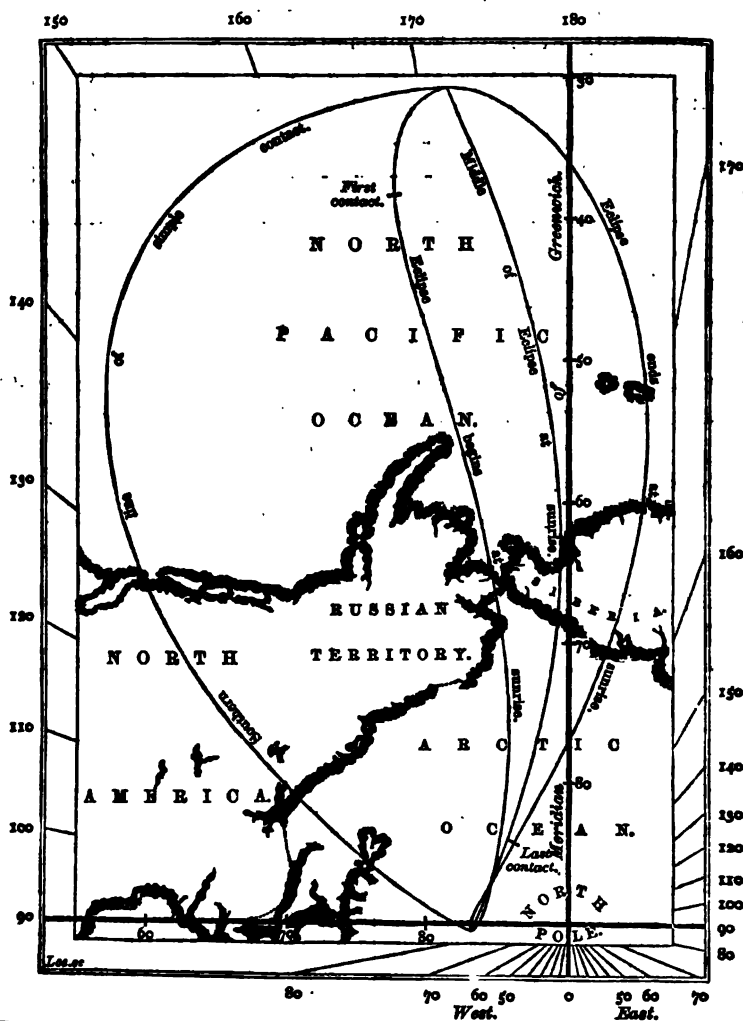
Southern line of simple contact.

Longitude.	Latitude.	Longitude.	Latitude.	Longitude.	Latitude.
° ' W.	° ' N.	° ' W.	° ' N.	° ' W.	° ' N.
171 49 W.	30 13 N.	141 35 W.	37 19 N.	125 28 W.	56 22 N.
162 51	29 53	138 45	39 47	122 15	60 28
156 47	30 33	136 11	42 28	118 34	64 47
152 14	31 38	133 29	45 41	113 54	69 29
148 20	33 7	131 1	48 52	106 27	75 16
144 50 W.	35 1 N.	128 25 W.	52 23 N.	87 37 W.	82 49 N.

Eclipse ends at sun-rise.

Longitude.	Latitude.	Longitude.	Latitude.	Longitude.	Latitude.
° ' W.	° ' N.	° ' E.	° ' N.	° ' E.	° ' N.
173 53 W.	30 48 N.	176 3 E.	41 57 N.	170 4 E.	61 20 N.
175 44	31 49	174 39	44 43	170 19	65 19
177 30	33 14	173 20	47 39	171 50	69 43
179 13 W.	35 1	172 9	50 46	176 14 E.	74 40
179 8 E.	37 4	171 10	54 6	175 57 W.	78 27
177 34 E.	39 26 N.	170 25 E.	57 36 N.	146 30 W.	82 54 N.

PATH OF THE MOON'S PENUMBRA UPON THE SURFACE OF THE EARTH,
DURING THE PARTIAL ECLIPSE OF THE SUN, MARCH 4, 1859.



IV.—A Partial Eclipse of the SUN, July 29, 1859, invisible at Greenwich.

ELEMENTS.			
	d	h	m s
Greenwich Mean Time of \odot in R.A. July 29	9	9	15.7
\odot 's and ζ 's Right Ascension - - - -	8	34	7.27
ζ 's Declination - - - - -	N. 20	7	5.4
\odot 's Declination - - - - -	N. 18	45	6.5
ζ 's Horary Motion in R.A. - - - - -	38	18	3
\odot 's Horary Motion in R.A. - - - - -	2	26	9
ζ 's Horary Motion in Declination - - - S.	12	43	2
\odot 's Horary Motion in Declination - - - S.	35	7	
ζ 's Equatorial Horizontal Parallax - -	61	21	6
\odot 's Equatorial Horizontal Parallax - -	8	4	
ζ 's True Semidiameter - - - - -	16	45	5
\odot 's True Semidiameter - - - - -	15	47	5

Begins on the Earth generally July 29^d 8^h 26^m.7, Mean Time at Greenwich,
in Longitude 94° 13' E. of Greenwich, and Latitude 66° 26' N.

Greatest Eclipse July 29^d 9^h 55^m.8, Mag. (Sun's diameter = 1) 0.523,
in Longitude 15° 39' W. of Greenwich, and Latitude 63° 9' N.

Ends on the Earth generally July 29^d 11^h 25^m.0,
in Longitude 66° 43' W. of Greenwich, and Latitude 33° 39' N.

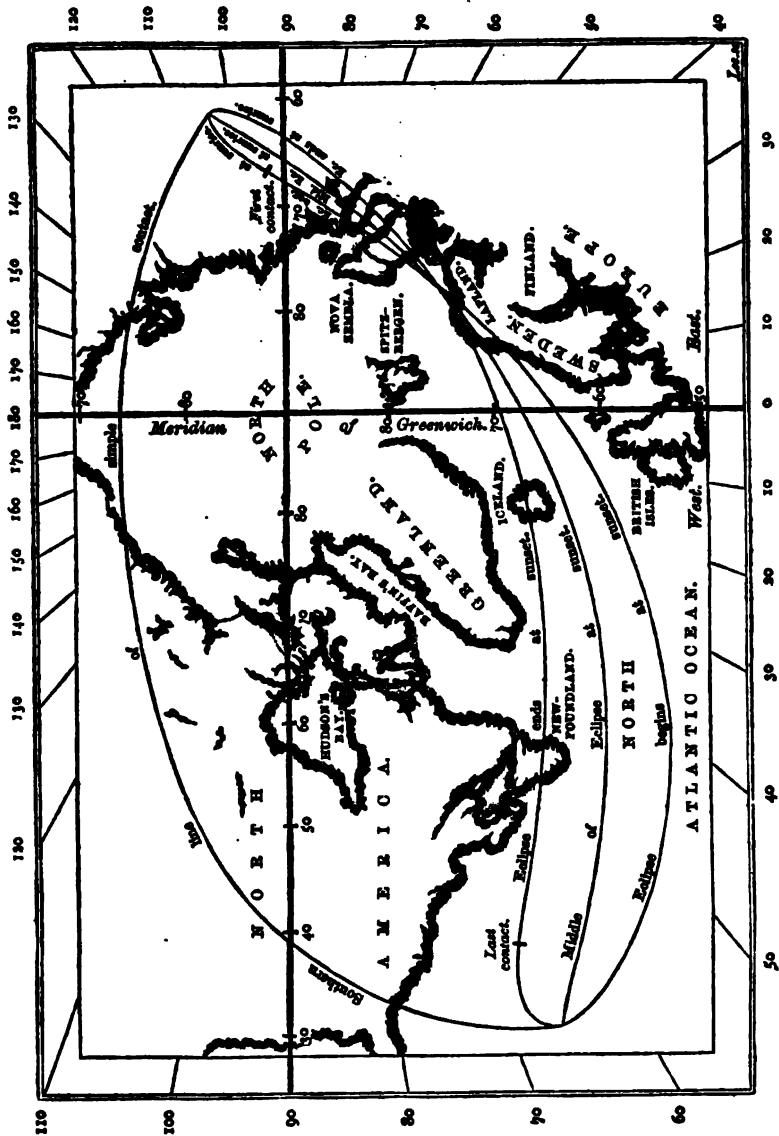
The limiting lines of this Eclipse, in the diagram in page 469, have been laid down from the following calculated positions :—

Southern Line of simple contact.			
Longitude.	Latitude.	Longitude.	Latitude.
° ' E.	° ' N.	° ' W.	° ' N.
103 43 E.	60 26 N.	113 59 W.	59 5 N.
120 3	66 28	108 44	55 19
137 18	70 43	103 59	51 26
160 59 E.	73 36	99 21	47 21
172 48 W.	73 57	94 25	43 0
152 36	72 14	88 31	38 11
138 13	69 29	81 57	33 33
127 56	66 14	75 4	29 36
120 10 W.	62 43 N.	65 44 W.	25 30 N.

Eclipse begins at sun-set.			
Longitude.	Latitude.	Longitude.	Latitude.
° ' E.	° ' N.	° ' W.	° ' N.
21 35 E.	69 14 N.	41 18 W.	41 30 N.
5 31 E.	66 0	46 1	37 46
6 31 W.	62 8	50 20	34 21
15 57	58 2	54 19	31 19
23 42	53 50	57 57	28 49
30 19	49 37	61 18	26 56
36 7 W.	45 28 N.	64 16 W.	25 50 N.

Eclipse ends at sun-rise.			
Longitude.	Latitude.	Longitude.	Latitude.
° ' E.	° ' N.	° ' E.	° ' N.
104 31 E.	61 28 N.	85 24 E.	64 52 N.
104 15	60 39	76 38	66 53
101 55	60 42	65 49	68 50
97 48	61 34	52 30	70 24
92 21 E.	63 1 N.	41 37 E.	71 7 N.

PATH OF THE MOON'S PENUMBRA UPON THE SURFACE OF THE EARTH,
DURING THE PARTIAL ECLIPSE OF THE SUN, JULY 29, 1859.



V.—A Total Eclipse of the MOON, Aug. 13, 1859, invisible at Greenwich.

ELEMENTS.			
	d	h	m s
Greenwich Mean Time of \varnothing in R.A. Aug. 13	4	34	20.5
ζ 's Right Ascension - - - - -	21	30	59.65
ζ 's Declination - - - - - S.	14	42	51.6
\odot 's Declination - - - - - N.	14	43	6.4
ζ 's Horary Motion in R.A. - - - - -	28	4.2	
\odot 's Horary Motion in R.A. - - - - -	2	21.3	
ζ 's Horary Motion in Declination - - - N.	11	57.4	
\odot 's Horary Motion in Declination - - - S.	45.7		
ζ 's Equatorial Horizontal Parallax - -	54	1.1	
\odot 's Equatorial Horizontal Parallax - -	8.5		
ζ 's True Semidiameter - - - - -	14	45.2	
\odot 's True Semidiameter - - - - -	15	49.6	

	d	h	m	
First contact with the Penumbra Aug. 13	1	26.5		} Mean Time at Greenwich.
First contact with the Shadow - —	2	36.1		
Beginning of Total Phase - - —	3	41.0		
Middle of the Eclipse - - - —	4	34.1		
End of Total Phase - - - —	5	27.2		
Last contact with the Shadow - —	6	32.1		
Last contact with the Penumbra —	7	41.7		

At these times respectively the Moon will be in the Zenith of the places whose positions are,

Longitude $158^{\circ} 12'$ E.	} of Greenwich.	Latitude $15^{\circ} 26'$ S.
141 18		15 12
125 32		14 59
112 38		14 48
99 44		14 38
83 59		14 25
67 4 E.		14 11 S.

Magnitude of the Eclipse (Moon's diameter = 1) 1.810.

The first contact with the Shadow occurs at 66° from the Northernmost point of the Moon's limb towards the East.

The last contact at 114° towards the West; in each case, for *direct* image.

VL.—A Partial Eclipse of the SUN, August 27, 1859, invisible at Greenwich.

ELEMENTS.				
Greenwich Mean Time of \odot in R.A.	Aug. 27	18	6	50.3
\odot 's and \lrcorner 's Right Ascension - - - -	- - - -	10	25	0.25
\lrcorner 's Declination - - - - - - - -	N.	8	28	51.8
\odot 's Declination - - - - - - - -	N.	9	54	49.0
\lrcorner 's Horary Motion in R.A. - - - - -	- - - - -	34	13.4	
\odot 's Horary Motion in R.A. - - - - -	- - - - -	2	17.1	
\lrcorner 's Horary Motion in Declination - - -	S.	16	51.8	
\odot 's Horary Motion in Declination - - -	S.	52.8		
\lrcorner 's Equatorial Horizontal Parallax - -	- -	61	4.9	
\odot 's Equatorial Horizontal Parallax - -	- -	8.5		
\lrcorner 's True Semidiameter - - - - - -	- - - - -	16	40.9	
\odot 's True Semidiameter - - - - - -	- - - - -	15	52.6	

Begins on the Earth generally Aug. 27^d 15^h 30^m.7, Mean Time at Greenwich,
in Longitude 42° 57' E. of Greenwich, and Latitude 28° 3' S.

Greatest Eclipse Aug. 27^d 17^h 1^m.1, Mag. (Sun's diameter = 1) 0.526,
in Longitude 33° 51' E. of Greenwich, and Latitude 61° 40' S.

Ends on the Earth generally Aug. 27^d 18^h 31^m.4,
in Longitude 121° 34' E. of Greenwich, and Latitude 77° 23' S.

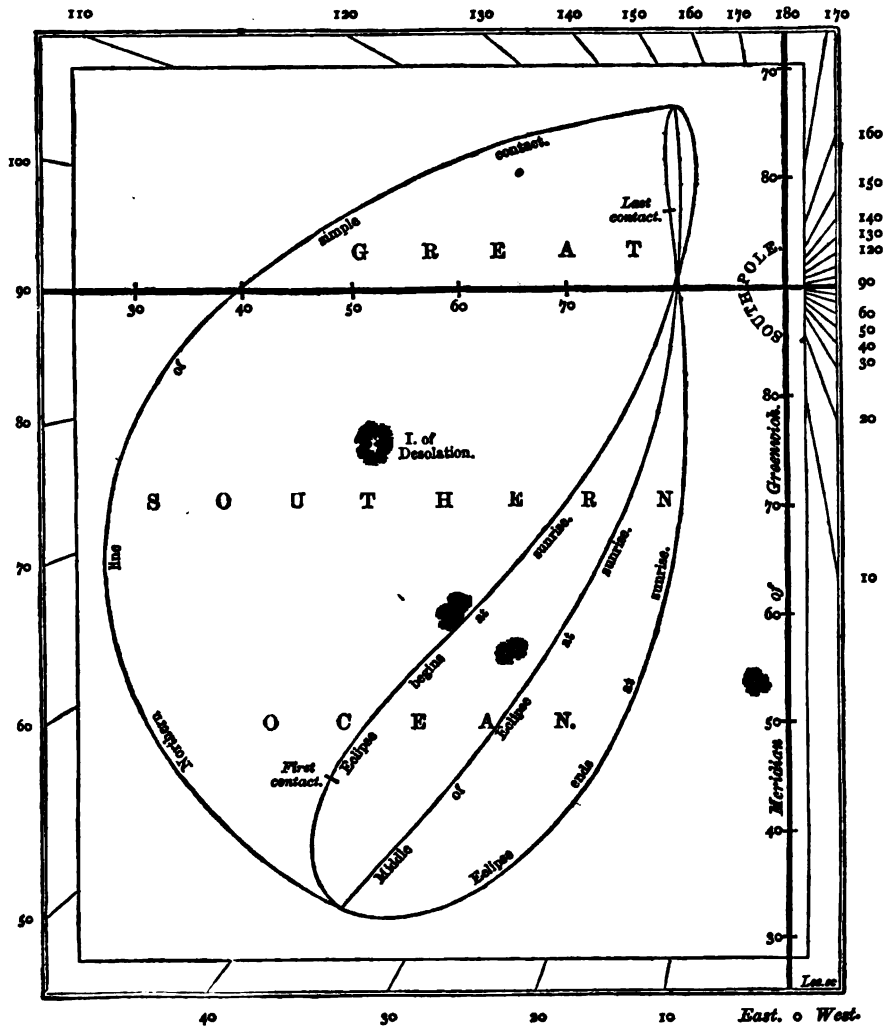
The limiting lines of this Eclipse, in the diagram in page 473, have been laid down from the following calculated positions:—

Northern line of simple contact.							
Longitude.		Latitude.		Longitude.		Latitude.	
°	'	°	'	°	'	°	'
36	20 E.	19	21 S.	84	24 E.	33	53 S.
43	6	18	27	88	14	37	47
49	6	18	9	92	32	42	12
55	49	18	30	97	22	46	51
62	16	19	43	103	16	51	52
67	28	21	30	111	29	57	34
72	2	23	49	121	31	62	50
76	16	26	39	132	23	66	56
80	5 E.	29	47 S.	147	33 E.	70	41 S.

Eclipse begins at sun-set.							
Longitude.		Latitude.		Longitude.		Latitude.	
°	'	°	'	°	'	°	'
148	32 E.	71	0 S.	134	53 E.	77	53 S.
148	55	72	3	120	36	79	34
147	23	73	42	100	8	80	9
143	8 E.	75	45 S.	93	47 E.	79	59 S.

Eclipse ends at sun-rise.							
Longitude.		Latitude.		Longitude.		Latitude.	
°	'	°	'	°	'	°	'
34	52 E.	19	42 S.	21	26 E.	45	21 S.
32	37	20	56	20	47	50	5
30	31	22	58	20	39	55	0
28	35	25	40	21	19	60	2
26	48	28	51	23	24	65	14
25	9	32	30	28	14	70	32
23	41	36	31	39	56	75	52
22	25 E.	40	48 S.	63	33 E.	79	29 S.

PATH OF THE MOON'S PENUMBRA UPON THE SURFACE OF THE EARTH,
DURING THE PARTIAL ECLIPSE OF THE SUN, AUGUST 27, 1859.



474 ELEMENTS OF OCCULTATIONS, 1859.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♂ in R. A. of ♄ and ♀.	At Greenwich Mean Time of ♄			Limiting Parallels.
			Apparent R. A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.		
			h m s	h m s	° ' "	♄ ' "	Latitude.
Jan. 6	♄ Capricor.	4	2 36 27	20 58 0.53	S. 17 47 31.9	S. 66 14	37 S. 90 S.
6	♄ Capricor.	4½	11 3 27	21 14 22.99	17 26 4.0	N. 5 25	41 N. 39 S.
7	♄ Capricor.	5	3 31 16	21 45 35.98	S. 14 12 54.1	N. 8 2	47 N. 36 S.
12	♄ Piscium -	3½	0 25 17	1 23 57.09	N. 14 37 12.2	S. 73 43	35 S. 75 S.
13	♄ Arietis -	4½	16 4 51	2 51 10.48	N. 20 46 37.4	N. 56 28	90 N. 20 N.
14	17 Tauri - -	4	10 33 16	3 36 32.04	N. 23 40 14.3	N. 62 38	90 N. 31 N.
14	19 Tauri - -	5	10 40 36	3 36 50.65	24 1 30.3	N. 42 24	90 N. 10 N.
14	20 Tauri - -	5	10 55 15	3 37 27.91	23 55 38.6	N. 50 19	90 N. 18 N.
14	23 Tauri - -	5	11 7 34	3 37 59.28	23 30 33.9	N. 77 7	90 N. 58 N.
14	♄ Tauri - -	3	11 34 30	3 39 7.91	N. 23 40 9.5	N. 71 16	90 N. 44 N.
15	♄ Tauri - -	5	0 4 44	4 11 42.87	N. 27 0 50.5	S. 37 57	8 N. 59 S.
16	♄ Tauri - -	2	0 2 3	5 17 24.87	28 29 12.9	S. 30 57	15 N. 45 S.
16	136 Tauri - -	5	9 37 7	5 44 30.15	27 34 36.2	N. 28 39	76 N. 9 N.
17	A Geminor.	5½	17 34 56	7 14 55.01	25 19 7.3	N. 35 44	85 N. 6 N.
18	♄ Geminor.	3½	1 12 52	7 35 58.25	N. 24 43 58.9	N. 8 35	52 N. 19 S.
18	♄ Cancri -	6	9 20 34	7 57 59.08	N. 23 2 5.5	N. 32 10	79 N. 2 S.
18	♄ Cancri -	6	19 24 54	8 24 35.30	20 55 0.1	N. 46 39	90 N. 8 N.
18	♄ Cancri -	4½	23 30 16	8 35 9.62	21 58 20.5	S. 66 52	20 S. 68 S.
19	SATURN -	-	5 3 56	8 49 18.97	18 35 14.3	N. 64 21	90 N. 23 N.
20	♄ Leonis -	5	6 25 22	9 50 40.10	N. 13 6 50.3	N. 22 5	65 N. 21 S.
20	♄ Leonis -	1½	10 51 35	10 0 53.58	N. 12 39 10.2	S. 20 28	26 N. 58 S.
20	44 Leonis -	6	18 21 14	10 17 51.10	9 29 52.3	N. 47 52	90 N. 0
20	♄ Leonis -	4	21 45 0	10 25 24.97	10 1 43.6	S. 39 35	10 N. 79 S.
21	♄ Leonis -	5	10 37 6	10 53 28.00	6 51 20.3	S. 62 35	13 S. 83 S.
21	B.A.C. 3836	6	16 49 4	11 6 40.50	N. 3 1 6.9	N. 64 5	90 N. 15 N.
21	75 Leonis -	6	18 25 18	11 10 3.80	N. 2 46 57.6	N. 51 28	90 N. 2 N.
21	76 Leonis -	6	19 12 13	11 11 42.71	2 25 15.4	N. 60 6	90 N. 10 N.
21	♄ Leonis -	5	23 29 42	11 20 42.76	N. 3 37 47.3	S. 84 1	50 S. 86 S.
22	♄ Leonis -	4½	3 50 24	11 29 45.37	S. 0 2 51.9	N. 64 24	90 N. 15 N.
23	♄ Virginis -	5	10 23 54	12 31 59.82	S. 7 13 14.8	N. 2 44	45 N. 41 S.
23	♄ Virginis -	5	17 52 40	12 47 2.60	S. 8 46 28.4	S. 17 49	26 N. 61 S.
24	♄ Virginis -	5	9 54 3	13 19 17.68	11 58 28.6	S. 57 14	14 S. 90 S.
24	83 Virginis -	6	18 36 30	13 36 54.67	15 28 16.6	N. 34 51	72 N. 12 S.
27	♄ Scorpii -	5	6 32 4	15 42 30.63	25 19 14.6	N. 13 49	39 N. 30 S.
27	A Scorpii -	5	7 45 9	15 45 9.58	S. 24 54 15.8	S. 19 26	8 N. 66 S.
27	♄ Scorpii -	3	10 7 34	15 50 19.93	S. 25 42 22.6	N. 13 6	38 N. 30 S.
27	B.A.C. 5347	5	14 20 15	15 59 32.56	25 56 50.7	N. 1 40	26 N. 42 S.
27	♄ Scorpii -	1½	23 58 35	16 20 46.17	26 7 1.3	S. 38 52	15 S. 90 S.
28	♄ Scorpii -	3½	2 50 29	16 27 6.77	27 55 15.3	N. 56 38	62 N. 20 N.
29	3 Sagittarii	5	10 53 43	17 38 40.90	S. 27 46 28.1	S. 19 27	4 S. 67 S.
29	B.A.C. 6127	5	20 3 32	17 59 8.95	S. 28 28 11.5	N. 28 43	47 N. 14 S.
30	♄ Sagittarii	3½	13 4 26	18 36 50.57	27 8 1.5	S. 9 41	11 N. 55 S.
30	♄ Sagittarii	2½	17 29 10	18 46 31.09	26 28 10.7	S. 32 31	10 S. 88 S.
31	♄ Sagittarii	5	2 51 24	19 6 53.37	25 29 49.5	S. 46 37	22 S. 90 S.
31	♄ Sagittarii	4½	12 45 27	19 28 6.96	S. 25 11 33.8	S. 6 31	19 N. 51 S.

ELEMENTS OF OCCULTATIONS, 1859. 475

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♂ in R. A. of (and #.	At Greenwich Mean Time of ♂			Limiting Parallels.
				Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
			h m s	h m s	° ' "	° ' "	Latitude.
Feb. 5	B.A.C. 8094	6	6 28 55	23 8 18.45	S. 4 15 49.2	N. 25 51	71 N. 20 S.
5	λ Piscium -	5	21 4 31	23 34 51.00	N. 1 0 14.8	S. 78 21	49 S. 89 S.
8	η Piscium -	3½	6 37 37	1 23 56.76	14 37 10.3	S. 66 26	24 S. 75 S.
9	ε Arietis -	4½	23 15 54	2 51 10.11	20 46 36.3	N. 63 6	90 N. 29 N.
10	17 Tauri - -	4	18 21 30	3 36 31.69	N. 23 40 13.7	N. 68 40	90 N. 42 N.
10	19 Tauri - -	5	18 29 6	3 36 56.30	N. 24 1 29.8	N. 48 26	90 N. 17 N.
10	20 Tauri - -	5	18 44 16	3 37 27.56	23 55 38.0	N. 56 21	90 N. 25 N.
11	ρ Tauri - -	5	8 22 47	4 11 42.53	27 0 50.5	S. 32 25	13 N. 54 S.
12	β Tauri - -	2	9 14 49	5 17 24.64	28 29 13.6	S. 26 29	19 N. 41 S.
12	136 Tauri - -	5	19 11 18	5 44 29.97	N. 27 34 37.1	N. 32 40	83 N. 13 N.
14	κ Geminor.	3½	12 1 24	7 35 58.32	N. 24 43 59.6	N. 10 33	54 N. 18 S.
15	η Cancri -	6	6 35 14	8 24 35.51	20 55 0.0	N. 47 36	90 N. 9 N.
15	39 Cancri -	6	9 30 8	8 32 1.95	20 30 7.0	N. 37 20	86 N. 1 S.
15	40 Cancri -	6	9 32 11	8 32 7.16	20 27 56.5	N. 39 6	89 N. 0
15	γ Cancri -	4½	10 44 9	8 35 9.85	N. 21 58 20.6	S. 66 8	20 S. 68 S.
15	SATURN -	-	12 49 26	8 40 26.53	N. 19 12 11.1	N. 73 44	90 N. 37 N.
16	ψ Leonis -	6	11 36 1	9 36 5.38	14 39 44.4	N. 24 49	68 N. 18 S.
16	ν Leonis -	5	17 48 51	9 50 40.49	13 6 48.5	N. 21 9	64 N. 22 S.
16	α Leonis -	1½	22 13 57	10 0 53.99	12 39 8.2	S. 21 38	26 N. 60 S.
17	ρ Leonis -	4	9 2 8	10 25 25.45	N. 10 1 41.0	S. 41 15	9 N. 80 S.
17	37 Sextantis	6	15 2 27	10 38 47.42	N. 7 6 43.2	N. 33 3	78 N. 15 S.
17	c Leonis -	5	21 43 42	10 53 28.53	6 51 17.2	S. 64 48	15 S. 83 S.
18	79 Leonis -	6	8 32 39	11 16 50.40	N. 2 10 39.4	N. 31 23	75 N. 17 S.
18	v Leonis -	4½	14 36 33	11 29 45.96	S. 0 2 56.1	N. 61 36	90 N. 12 N.
19	κ Virginis -	5	20 20 53	12 32 0.53	S. 7 13 19.8	S. 0 42	42 N. 45 S.
20	ψ Virginis -	5	3 36 7	12 47 3.36	S. 8 46 33.6	S. 21 19	23 N. 65 S.
20	i Virginis -	5	19 7 47	13 19 18.47	11 58 33.7	S. 60 49	17 S. 90 S.
23	b Scorp̄ii -	5	13 57 27	15 42 31.58	25 19 17.8	N. 10 56	36 N. 33 S.
23	A Scorp̄ii -	5	15 9 11	15 45 10.53	24 54 18.9	S. 22 18	5 N. 70 S.
23	4 Scorp̄ii -	6	15 58 46	15 47 0.49	S. 25 51 1.0	N. 28 49	54 N. 15 S.
23	ε Scorp̄ii -	3	17 29 2	15 50 20.89	S. 25 42 25.6	N. 10 16	35 N. 34 S.
23	B.A.C. 5347	5	21 37 24	15 59 33.52	25 56 53.6	S. 1 5	23 N. 45 S.
24	α Scorp̄ii -	1½	7 6 59	16 20 47.12	26 7 3.7	S. 41 28	17 S. 90 S.
24	τ Scorp̄ii -	3½	9 56 35	16 27 7.74	27 55 17.4	N. 54 5	62 N. 16 N.
25	3 Sagittarii	5	17 42 58	17 38 41.80	S. 27 46 28.5	S. 21 26	6 S. 70 S.
26	B.A.C. 6127	5	2 50 38	17 59 9.86	S. 28 28 11.4	N. 26 53	44 N. 16 S.
26	ρ Sagittarii	3½	19 49 50	18 36 51.37	27 8 0.7	S. 11 14	10 N. 57 S.
27	σ Sagittarii	2½	0 14 32	18 46 31.90	26 28 9.8	S. 34 0	11 S. 90 S.
27	ψ Sagittarii	5	9 36 58	19 6 54.10	25 29 48.4	S. 47 58	24 S. 90 S.
27	A Sagittarii	4½	19 31 38	19 28 7.64	S. 25 11 32.3	S. 7 44	18 N. 52 S.
Mar. 1	θ Capricor.	4	15 30 46	20 58 1.13	S. 17 47 29.8	S. 65 34	35 S. 90 S.
1	ι Capricor.	4½	23 54 26	21 14 23.50	S. 17 26 1.7	N. 6 44	43 N. 37 S.
7	η Piscium -	3½	12 8 3	1 23 56.51	N. 14 37 8.3	S. 67 55	26 S. 75 S.
9	ε Arietis -	4½	4 44 8	2 51 9.71	20 46 34.5	N. 61 5	90 N. 26 N.
10	17 Tauri - -	4	0 1 11	3 36 31.23	N. 23 40 12.3	N. 66 28	90 N. 39 N.

476 ELEMENTS OF OCCULTATIONS, 1859.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♂ in R. A. of (and #.		At Greenwich Mean Time of ♄			Limiting Parallels.
			♂ in R. A. of (and #.	Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.		
			h m s	h m s	° ' "	° ' "	Latitude.	
Mar. 10	19 Tauri - -	5	0 8 53	3 36 49.84	N. 24 1 28.4	N. 46 13	90 N. 15 N.	
10	20 Tauri - -	5	0 24 16	3 37 27.11	23 55 36.6	N. 54 8	90 N. 23 N.	
10	7 Tauri - -	3	1 5 30	3 39 7.11	23 40 7.6	N. 75 4	90 N. 58 N.	
10	9 Tauri - -	5	14 16 31	4 11 42.06	27 0 49.6	S. 34 44	10 N. 56 S.	
11	β Tauri - -	2	15 44 42	5 17 24.18	N. 28 29 13.5	S. 28 54	16 N. 44 S.	
12	136 Tauri - -	5	1 59 8	5 44 29.51	N. 27 34 37.4	N. 30 14	79 N. 12 N.	
13	Α Geminor. 5½	12 8 5	7 14 54.71	25 19 9.3	N. 35 50	87 N. 6 N.		
13	κ Geminor. 3½	20 14 59	7 35 58.05	24 44 0.7	N. 8 22	52 N. 19 S.		
14	7 Cancrī - -	6	15 28 31	8 24 35.33	20 55 1.0	N. 45 43	90 N. 8 N.	
14	SATURN - -	-	19 13 39	8 33 50.56	N. 19 37 48.4	N. 79 4	90 N. 52 N.	
14	γ Cancrī - -	4½	19 45 54	8 35 9.70	N. 21 58 21.8	S. 67 56	24 S. 68 S.	
16	ν Leonis - -	5	3 44 54	9 50 40.52	13 6 48.4	N. 20 16	63 N. 22 S.	
16	α Leonis - -	1½	8 16 3	10 0 54.05	12 39 8.1	S. 22 21	25 N. 60 S.	
16	44 Leonis - -	6	15 51 32	10 17 51.66	9 29 49.0	N. 45 56	90 N. 2 S.	
16	ρ Leonis - -	4	19 16 55	10 25 25.57	N. 10 1 40.6	S. 41 33	8 N. 80 S.	
17	c Leonis - -	5	8 9 22	10 53 28.72	N. 6 51 16.0	S. 64 33	15 S. 83 S.	
17	B.A.C. 3836	6	14 18 22	11 6 41.28	3 1 1.3	N. 62 12	90 N. 13 N.	
17	75 Leonis - -	6	15 53 30	11 10 4.59	2 46 51.9	N. 49 35	90 N. 0	
17	76 Leonis - -	6	16 39 51	11 11 43.51	N. 2 25 9.5	N. 58 14	90 N. 8 N.	
18	ν Leonis - -	4½	1 9 39	11 29 46.24	S. 0 2 58.5	N. 62 39	90 N. 13 N.	
19	χ Virginis - -	5	6 48 26	12 32 0.97	S. 7 13 23.2	N. 1 46	44 N. 42 S.	
19	ψ Virginis - -	3	13 59 5	12 47 3.82	8 46 37.1	S. 18 32	26 N. 62 S.	
20	i Virginis - -	5	5 17 30	13 19 19.03	11 58 37.6	S. 57 21	13 S. 90 S.	
20	83 Virginis - -	6	13 35 1	13 36 56.11	15 28 26.0	N. 35 5	72 N. 12 S.	
22	δ Scorpī - -	5	22 43 34	15 42 32.44	S. 25 19 20.9	N. 16 23	41 N. 28 S.	
22	Α Scorpī - -	5	23 53 47	15 45 11.39	S. 24 54 22.0	S. 16 50	11 N. 62 S.	
23	π Scorpī - -	3	2 10 44	15 50 21.79	25 42 28.7	N. 15 47	40 N. 28 S.	
23	B.A.C. 5347	5	6 14 1	15 59 34.43	25 56 56.4	N. 4 30	28 N. 39 S.	
23	σ Scorpī - -	3½	11 58 34	16 12 39.47	25 15 13.1	S. 69 46	55 S. 90 S.	
23	α Scorpī - -	1½	15 32 30	16 20 48.02	S. 26 7 5.9	S. 35 45	11 S. 90 S.	
23	τ Scorpī - -	3½	18 18 59	16 27 8.66	S. 27 55 19.7	N. 59 50	62 N. 24 N.	
25	3 Sagittarii	5	1 36 52	17 38 42.77	27 46 29.0	S. 15 23	0 61 S.	
25	B.A.C. 6127	5	10 38 52	17 59 10.80	28 28 11.4	N. 32 58	52 N. 9 S.	
26	φ Sagittarii	3½	3 30 40	18 36 52.31	27 7 59.8	S. 5 9	15 N. 49 S.	
26	σ Sagittarii	2½	7 54 3	18 46 32.79	S. 26 28 8.7	S. 27 56	5 S. 79 S.	
26	ψ Sagittarii	5	17 14 36	19 6 54.96	S. 25 29 46.9	S. 41 56	17 S. 90 S.	
27	Α Sagittarii	4½	3 8 20	19 28 8.50	25 11 30.3	S. 1 47	24 N. 46 S.	
28	θ Capricor. 4	23 11 54	20 58 1.76	17 47 27.1	S. 60 34	27 S. 90 S.		
29	ι Capricor. 4½	7 36 57	21 14 24.11	17 25 58.7	N. 11 26	47 N. 33 S.		
29	μ Capricor. 5	23 57 38	21 45 36.83	14 12 49.8	S. 14 33	53 N. 30 S.		
30	VENUS - -	-	3 12 50	21 51 44.96	S. 12 53 32.7	S. 23 34	19 N. 70 S.	
Apr. 5	ι Arietis - -	4½	10 38 57	2 51 9.47	N. 20 46 32.8	N. 54 8	90 N. 18 N.	
6	17 Tauri - -	4	5 38 24	3 36 30.91	23 40 10.7	N. 58 31	90 N. 28 N.	
6	19 Tauri - -	5	5 46 0	3 36 49.52	24 1 26.7	N. 38 16	90 N. 7 N.	
6	20 Tauri - -	5	6 1 10	3 37 26.78	N. 23 55 35.0	N. 46 10	90 N. 15 N.	

ELEMENTS OF OCCULTATIONS, 1859. 477

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♂ in R. A. of (and *.	At Greenwich Mean Time of ♂			Limiting Parallels.
				Apparent R. A. of (and *.	Apparent Declination of *.	Diff. of Apparent Dec. of (and *.	
			h m s	h m s	° ' "	° ' "	Latitude.
Apr.	6 23 Tauri - -	5	6 13 57	3 37 58.16	N.23 30 30.3	N.72 57	90 N. 51 N.
	6 7 Tauri - -	3	6 41 52	3 39 6.78	23 40 6.0	N.67 4	90 N. 40 N.
	6 27 Tauri - -	4	7 22 44	3 40 47.34	23 37 17.4	N.75 14	90 N. 57 N.
	6 9 Tauri - -	5	19 44 11	4 11 41.67	27 0 48.0	S.43 18	2 N. 63 S.
	7 13 Tauri - -	2	21 5 20	5 17 23.71	N.28 29 12.7	S.38 16	6 N. 55 S.
	8 136 Tauri - -	5	7 21 3	5 44 29.03	N.27 34 36.9	N.20 38	66 N. 3 N.
	10 κ Geminor.	3½	2 8 40	7 35 57.58	24 44 1.7	S. 1 30	42 N. 28 S.
	11 SATURN -	-	0 54 34	8 32 1.62	19 44 39.3	N.71 35	90 N. 38 N.
	11 γ Cancri -	4½	2 13 1	8 35 9.32	21 58 23.2	S.77 18	44 S. 68 S.
	12 ν Leonis -	5	11 7 2	9 50 40.29	N.13 6 49.5	N.12 33	56 N. 29 S.
	12 α Leonis -	1½	15 46 12	10 0 53.85	N.12 39 9.1	S.29 44	18 N. 68 S.
	13 ρ Leonis -	4	3 6 14	10 25 25.41	10 1 41.2	S.48 0	1 N. 64 S.
	13 37 Sextantis	6	9 22 33	10 38 47.44	7 6 42.6	N.27 7	71 N. 19 S.
	13 δ Leonis -	5	16 15 25	10 53 19.02	4 22 11.8	N.80 32	90 N. 42 N.
	13 ε Leonis -	5	16 19 59	10 53 28.63	N. 6 51 16.4	S.69 47	23 S. 83 S.
	14 ν Leonis -	4½	9 45 23	11 29 46.24	S. 0 2 59.0	N.59 14	90 N. 10 N.
	15 χ Virginis -	5	15 55 57	12 32 1.12	7 13 24.8	N. 1 49	44 N. 42 S.
	15 ψ Virginis -	5	23 11 40	12 47 4.02	8 46 38.9	S.17 38	26 N. 61 S.
	16 ι Virginis -	5	14 37 16	13 19 19.31	11 58 39.7	S.54 41	11 S. 90 S.
	18 B.A.C.4984	6	13 45 17	15 1 41.40	S.23 26 51.5	N.62 42	67 N. 23 N.
	19 b Scorpii -	5	7 47 30	15 42 33.14	S.25 19 23.5	N.25 4	50 N. 19 S.
	19 A Scorpii -	5	8 56 58	15 45 12.10	24 54 24.4	S. 8 4	18 N. 52 S.
	19 κ Scorpii -	3	11 12 24	15 50 22.48	25 42 31.0	N.24 43	49 N. 19 S.
	19 B.A.C.5347	5	15 12 57	15 59 35.14	25 56 58.7	N.13 42	37 N. 30 S.
	19 σ Scorpii -	3½	20 53 31	16 12 40.21	S.25 15 15.0	S.60 12	38 S. 90 S.
	20 α Scorpii -	1½	0 24 56	16 20 48.81	S.26 7 7.9	S.25 58	2 S. 75 S.
	20 τ Scorpii -	3½	3 9 25	16 27 9.47	27 55 21.6	N.69 47	62 N. 47 N.
	21 3 Sagittarii	5	10 5 34	17 38 43.66	27 46 29.3	S. 3 53	11 N. 48 S.
	21 B.A.C.6127	5	19 2 10	17 59 11.71	28 28 11.3	N.44 51	62 N. 4 N.
	22 φ Sagittarii	3½	11 45 40	18 36 53.23	S.27 7 58.7	N. 7 19	27 N. 36 S.
	22 σ Sagittarii	2½	16 7 22	18 46 33.71	S.26 28 7.4	S.15 21	7 N. 61 S.
	23 ψ Sagittarii	5	1 25 0	19 6 55.91	25 29 45.0	S.29 7	4 S. 80 S.
	23 h Sagittarii	4½	11 16 43	19 28 9.41	25 11 27.9	N.11 13	36 N. 32 S.
	25 θ Capricor.	4	7 24 34	20 58 2.60	17 47 23.2	S.47 31	11 S. 90 S.
	25 ι Capricor.	4½	15 52 26	21 14 24.89	S.17 25 54.8	N.24 19	60 N. 20 S.
	26 μ Capricor.	5	8 19 46	21 45 37.58	S.14 12 45.6	N.26 51	66 N. 18 S.
	28 λ Piscium -	5	19 27 31	23 34 51.73	N. 1 0 17.8	S.71 0	31 S. 89 S.
May	5 13 Tauri - -	2	3 30 48	5 17 23.45	28 29 11.3	S.48 50	5 S. 62 S.
	5 136 Tauri - -	5	13 33 23	5 44 28.73	27 34 35.8	N. 9 12	53 N. 7 S.
	7 κ Geminor.	3½	7 42 17	7 35 57.18	N.24 44 1.9	S.15 42	29 N. 40 S.
	7 μ Cancri -	5	17 3 0	7 59 29.23	N.21 59 25.4	N.64 4	90 N. 31 N.
	8 SATURN -	-	7 53 4	8 35 39.05	19 31 33.2	N.52 4	90 N. 14 N.
	9 ν Leonis -	5	16 45 53	9 50 39.96	13 6 50.9	S. 2 14	42 N. 41 S.
	9 A Leonis -	5	21 16 4	10 0 26.97	10 41 6.7	N.76 48	90 N. 39 N.
	9 α Leonis -	1½	21 28 21	10 0 53.52	N.12 39 10.5	S.44 20	4 N. 75 S.

478 ELEMENTS OF OCCULTATIONS, 1859.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♂ in R. A. of (and #.	At Greenwich Mean Time of ♂			Limiting Parallels.
				Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
			h m s	h m s	° ' "	° ' "	Latitude. ° ' "
May 10	ρ Leonis -	4	8 57 54	10 25 25.14	N. 10 1 42.6	S. 62 2	14 S. 80 S.
10	48 Leonis -	6	9 56 27	10 27 28.57	7 40 32.8	N. 64 0	90 N. 18 N.
10	d Leonis -	5	22 20 17	10 53 18.78	4 22 12.8	N. 67 27	90 N. 21 N.
11	76 Leonis -	6	7 18 14	11 11 43.24	N. 2 25 10.3	N. 41 36	90 N. 7 S.
11	v Leonis -	4½	16 10 20	11 29 46.06	S. 0 2 58.3	N. 47 51	64 N. 1 S.
12	χ Virginis -	5	22 57 52	12 32 1.08	S. 7 13 24.9	S. 5 47	37 N. 49 S.
13	ψ Virginis -	5	6 22 8	12 47 4.01	8 46 39.2	S. 24 12	20 N. 68 S.
13	i Virginis -	5	22 4 42	13 19 19.38	11 58 40.4	S. 59 2	17 S. 90 S.
16	b Scorp̄ii -	5	15 56 16	15 42 33.61	25 19 25.3	N. 29 43	55 N. 14 S.
16	A Scorp̄ii -	5	17 5 59	15 45 12.57	S. 24 54 26.2	S. 3 16	22 N. 47 S.
16	π Scorp̄ii -	3	19 21 51	15 50 22.98	S. 25 42 32.8	N. 29 47	54 N. 14 S.
16	B.A.C. 5347	5	23 23 1	15 59 35.66	25 57 0.3	N. 19 14	42 N. 24 S.
17	σ Scorp̄ii -	3½	5 4 8	16 12 40.78	25 15 16.5	S. 54 0	30 S. 90 S.
17	α Scorp̄ii -	1½	8 35 43	16 20 49.38	26 7 9.3	S. 19 22	4 N. 66 S.
18	A Ophiuchi	5	4 23 31	17 6 44.27	S. 26 23 38.3	S. 66 16	54 S. 90 S.
18	3 Sagittarii	5	18 13 5	17 38 44.42	S. 27 46 29.7	N. 6 11	20 N. 37 S.
19	B.A.C. 6127	5	3 7 53	17 59 12.54	28 28 11.2	N. 55 44	62 N. 19 N.
19	ρ Sagittarii	3½	19 47 49	18 36 54.08	27 7 57.7	N. 19 38	40 N. 23 S.
20	σ Sagittarii	2½	0 8 40	18 46 34.60	26 28 6.2	S. 2 40	19 N. 46 S.
20	ψ Sagittarii	5	9 24 40	19 6 56.79	S. 25 29 43.3	S. 15 44	9 N. 61 S.
20	λ Sagittarii	4½	19 15 6	19 28 10.30	S. 25 11 25.8	N. 25 19	51 N. 18 S.
22	θ Capricor.	4	15 26 43	20 58 3.49	17 47 19.1	S. 31 5	6 N. 81 S.
22	i Capricor.	4½	23 57 30	21 14 25.78	17 25 50.4	N. 40 59	71 N. 3 S.
23	μ Capricor.	5	16 32 34	21 45 38.45	S. 14 12 40.8	N. 43 47	76 N. 1 S.
26	λ Piscium -	5	4 24 15	23 34 52.51	N. 1 0 22.5	S. 56 6	11 S. 89 S.
28	η Piscium -	3½	12 46 52	1 23 57.35	N. 14 37 10.0	S. 62 37	18 S. 75 S.
June 3	κ Geminor.	3½	14 54 4	7 35 56.98	24 44 1.5	S. 27 42	18 N. 52 S.
3	μ Cancri	5	23 59 58	7 59 29.00	-21 59 25.4	N. 51 7	90 N. 16 N.
4	SATURN -	-	17 54 39	8 44 1.54	19 0 21.9	N. 26 37	71 N. 11 S.
5	v Leonis -	5	22 41 46	9 50 39.67	N. 13 6 52.1	S. 18 30	27 N. 56 S.
6	A Leonis -	5	3 7 58	10 0 26.67	N. 10 41 8.0	N. 60 23	90 N. 15 N.
6	α Leonis -	1½	3 20 5	10 0 53.22	12 39 11.8	S. 60 45	13 S. 77 S.
6	ρ Leonis -	4	14 41 15	10 25 24.84	10 1 44.0	S. 78 37	39 S. 80 S.
7	d Leonis -	5	3 57 4	10 53 18.50	N. 4 22 14.3	N. 50 58	90 N. 3 N.
7	v Leonis -	4½	21 43 41	11 29 45.82	S. 0 2 57.0	N. 31 59	77 N. 15 S.
9	χ Virginis -	5	4 38 7	12 32 0.90	S. 7 13 24.0	S. 19 22	25 N. 63 S.
9	ψ Virginis -	5	12 6 4	12 47 3.85	8 46 38.5	S. 37 2	8 N. 86 S.
10	i Virginis -	5	3 58 19	13 19 19.28	11 58 40.1	S. 70 7	32 S. 90 S.
12	b Scorp̄ii -	5	22 39 16	15 42 33.85	25 19 26.5	N. 27 8	52 N. 16 S.
12	A Scorp̄ii -	5	23 49 44	15 45 12.81	S. 24 54 27.3	S. 5 42	20 N. 50 S.
13	π Scorp̄ii -	3	2 7 4	15 50 23.24	S. 25 42 34.1	N. 27 38	52 N. 16 S.
13	B.A.C. 5347	5	6 10 45	15 59 35.95	25 57 1.6	N. 17 36	41 N. 26 S.
13	σ Scorp̄ii -	3½	11 55 14	16 12 41.09	25 15 17.5	S. 54 56	32 S. 90 S.
13	α Scorp̄ii -	1½	15 28 47	16 20 49.71	26 7 10.4	S. 19 51	3 N. 66 S.
14	A Ophiuchi	5	11 25 47	17 6 44.73	S. 26 23 39.0	S. 64 20	51 S. 90 S.

ELEMENTS OF OCCULTATIONS, 1859. 479

Month and Day.	Star's Name.	Magnitude.	At Greenwich Mean Time of 6				Limiting Parallels.
			Greenwich Mean Time of Apparent ♄ in R. A. (and °.	Apparent R. A. of (and °.	Apparent Declination of °.	Diff. of Apparent Dec. of (and °.	
			h m s	h m s	° ' "	° ' "	Latitude.
June 15	3 Sagittarii	5	1 19 54	17 38 44.98	S. 27 46 30.2	N. 9 44	24 N. 33 S.
15	B.A.C. 6127	5	10 16 52	17 59 13.13	28 28 11.6	N. 60 17	62 N. 27 N.
16	♄ Sagittarii	3½	2 59 33	18 36 54.78	27 7 57.3	N. 26 1	47 N. 16 S.
16	♄ Sagittarii	2½	7 20 51	18 46 35.28	26 28 5.5	N. 4 10	26 N. 39 S.
16	♄ Sagittarii	5	16 37 37	19 6 57.51	S. 25 29 42.2	S. 7 55	16 N. 52 S.
17	♄ Sagittarii	4½	2 28 38	19 28 11.09	S. 25 11 24.2	N. 34 8	61 N. 8 S.
18	♄ Capricor.	4	22 44 9	20 58 4.34	17 47 15.3	S. 18 21	18 N. 64 S.
19	♄ Capricor.	4½	7 16 47	21 14 26.67	17 25 46.3	N. 54 20	73 N. 13 N.
19	♄ Capricor.	5	23 57 9	21 45 39.32	S. 14 12 36.2	N. 58 10	76 N. 17 N.
22	♄ Piscium	5	12 32 5	23 34 53.37	N. 1 0 28.1	S. 40 29	6 N. 85 S.
24	♄ Piscium	3½	22 1 52	1 23 58.17	N. 14 37 14.2	S. 50 4	4 S. 75 S.
26	♄ Arietis	4½	13 50 42	2 51 10.71	20 46 35.2	N. 60 59	90 N. 27 N.
27	17 Tauri	4	8 25 11	3 36 31.86	23 40 10.7	N. 58 0	90 N. 27 N.
27	19 Tauri	5	8 32 33	3 36 50.47	24 1 26.6	N. 37 43	90 N. 7 N.
27	20 Tauri	5	8 47 18	3 37 27.73	N. 23 55 34.9	N. 45 31	90 N. 14 N.
27	23 Tauri	5	8 59 42	3 37 59.10	N. 23 30 30.4	N. 72 13	90 N. 48 N.
27	♄ Tauri	3	9 26 49	3 39 7.71	23 40 5.9	N. 66 9	90 N. 38 N.
27	♄ Tauri	4	10 6 28	3 40 48.26	23 37 17.3	N. 74 4	90 N. 52 N.
27	♄ Tauri	5	22 2 49	4 11 42.38	27 0 45.9	S. 49 6	4 S. 63 S.
July 1	♄ Canori	4	23 39 41	8 36 41.37	N. 18 40 11.6	N. 75 42	90 N. 41 N.
2	SATURN	-	7 22 9	8 55 50.01	N. 18 14 13.7	N. 0 52	44 N. 34 S.
3	♄ Leonis	5	6 30 59	9 50 39.50	13 6 52.8	S. 29 52	18 N. 67 S.
3	A Leonis	5	10 49 10	10 0 26.49	10 41 9.0	N. 48 41	90 N. 2 N.
3	♄ Leonis	1½	11 0 56	10 0 53.05	12 39 12.6	S. 72 28	26 S. 77 S.
4	d Leonis	5	10 55 34	10 53 18.28	N. 4 22 15.7	N. 37 51	84 N. 10 S.
5	♄ Leonis	4½	4 15 25	11 29 45.57	S. 0 2 55.4	N. 18 25	61 N. 28 S.
6	♄ Virginis	5	10 34 50	12 32 0.66	7 13 22.6	S. 32 36	13 N. 78 S.
6	♄ Virginis	5	17 56 51	12 47 3.62	8 46 37.1	S. 50 1	4 S. 90 S.
9	B.A.C. 4984	6	9 56 32	15 1 41.78	23 26 54.8	N. 51 30	67 N. 9 N.
10	♄ Scorpii	5	4 23 43	15 42 33.82	S. 25 19 27.1	N. 20 7	45 N. 23 S.
10	A Scorpii	5	5 34 39	15 45 12.79	S. 24 54 27.9	S. 12 37	14 N. 57 S.
10	♄ Scorpii	3	7 52 56	15 50 23.22	25 42 34.8	N. 20 56	45 N. 22 S.
10	B.A.C. 5347	5	11 58 21	15 59 35.96	25 57 2.3	N. 11 15	34 N. 32 S.
10	♄ Scorpii	3½	17 45 25	16 12 41.13	25 15 18.1	S. 60 46	40 S. 90 S.
10	♄ Scorpii	1½	21 20 37	16 20 49.78	S. 26 7 11.1	S. 25 22	2 S. 74 S.
11	A Ophiuchi	5	17 27 7	17 6 44.89	S. 26 23 39.7	S. 68 5	59 S. 90 S.
12	3 Sagittarii	5	7 27 37	17 38 45.22	27 46 31.0	N. 7 13	22 N. 36 S.
12	B.A.C. 6127	5	16 28 22	17 59 13.43	28 28 12.4	N. 58 33	62 N. 24 N.
13	♄ Sagittarii	3½	9 17 3	18 36 55.16	27 7 57.6	N. 25 43	47 N. 17 S.
13	♄ Sagittarii	2½	13 39 40	18 46 35.69	S. 26 28 5.6	N. 4 15	26 N. 39 S.
13	♄ Sagittarii	5	22 58 54	19 6 57.97	S. 25 29 41.9	S. 7 2	17 N. 51 S.
14	♄ Sagittarii	4½	8 52 2	19 28 11.59	25 11 23.7	N. 35 51	63 N. 6 S.
16	♄ Capricor.	4	5 11 47	20 58 5.02	17 47 12.6	S. 13 5	23 N. 58 S.
16	♄ Capricor.	4½	13 44 48	21 14 27.36	17 25 43.4	N. 60 14	73 N. 21 N.
17	♄ Capricor.	5	6 26 19	21 45 40.08	S. 14 12 32.4	N. 65 12	76 N. 27 N.

480 ELEMENTS OF OCCULTATIONS, 1859.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♂ in R.A. of ♄ and ♀.	At Greenwich Mean Time of ♄			Limiting Parallels
			Apparent R.A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.		
			h m s	h m s	° ' "	° ' "	Latitude.
July 17	♄ Aquarii -	6	15 56 33	22 3 3.88	S. 11 30 29.6	N. 22 31	63 N. 22 S.
19	♄ Piscium -	5	19 21 36	23 34 54.20	N. 1 0 33.7	S. 30 46	15 N. 78 S.
22	♄ Piscium -	3½	5 52 49	1 23 59.09	14 37 19.5	S. 40 32	5 N. 75 S.
23	♄ Arietis -	4½	22 44 56	2 51 11.59	20 46 38.8	N. 68 49	90 N. 39 N.
24	17 Tauri -	4	17 49 57	3 36 32.72	N. 23 40 13.3	N. 64 44	90 N. 37 N.
24	19 Tauri -	5	17 57 31	3 36 51.33	N. 24 1 29.1	N. 44 26	90 N. 14 N.
24	20 Tauri -	5	18 12 39	3 37 28.59	23 55 37.4	N. 52 14	90 N. 22 N.
24	♄ Tauri -	3	18 53 13	3 39 8.56	23 40 8.4	N. 72 49	90 N. 51 N.
25	♄ Tauri -	5	7 48 36	4 11 43.23	27 0 47.4	S. 43 16	2 N. 63 S.
26	♄ Tauri -	2	8 32 57	5 17 24.69	N. 28 29 9.4	S. 49 4	5 S. 62 S.
26	136 Tauri -	5	18 25 42	5 44 29.76	N. 27 34 33.7	N. 5 37	49 N. 11 S.
31	MERCURY -	-	8 0 6	10 26 28.19	8 21 59.6	S. 4 8	40 N. 45 S.
31	♄ Leonis -	5	20 2 40	10 53 18.18	N. 4 22 16.8	N. 32 12	76 N. 16 S.
Aug. 1	♄ Leonis -	4½	12 49 57	11 29 45.40	S. 0 2 54.0	N. 12 5	55 N. 33 S.
2	♄ Virginis -	5	18 12 27	12 32 0.41	S. 7 13 20.9	S. 39 31	8 N. 88 S.
3	♄ Virginis -	5	1 21 29	12 47 3.35	S. 8 46 35.4	S. 56 57	10 S. 90 S.
6	♄ Scorpii -	5	10 17 2	15 42 33.56	25 19 27.0	N. 14 53	39 N. 29 S.
6	♄ Scorpii -	5	11 27 30	15 45 12.53	24 54 27.7	S. 17 49	9 N. 63 S.
6	♄ Scorpii -	3	13 44 53	15 50 22.97	25 42 34.7	N. 15 49	40 N. 28 S.
6	B.A.C. 5347	5	17 48 56	15 59 35.72	S. 25 57 2.3	N. 6 17	29 N. 37 S.
6	♄ Scorpii -	3½	23 34 28	16 12 40.91	S. 25 15 18.2	S. 65 32	47 S. 90 S.
7	♄ Scorpii -	1½	3 8 57	16 20 49.55	26 7 11.3	S. 30 1	7 S. 81 S.
7	♄ Scorpii -	3½	5 55 49	16 27 10.28	27 55 26.0	N. 66 45	62 N. 39 N.
8	3 Sagittarii	5	13 16 18	17 38 45.13	27 46 31.8	N. 3 48	18 N. 40 S.
8	B.A.C. 6127	5	22 18 38	17 59 13.39	S. 28 28 13.3	N. 55 28	62 N. 19 N.
9	♄ Sagittarii	3½	15 11 5	18 36 55.20	S. 27 7 58.4	N. 23 16	44 N. 19 S.
9	♄ Sagittarii	2½	19 34 45	18 46 35.76	26 28 6.3	N. 1 57	24 N. 42 S.
10	♄ Sagittarii	5	4 56 10	19 6 58.08	25 29 42.5	S. 9 1	15 N. 53 S.
10	♄ Sagittarii	4½	14 51 25	19 28 11.75	25 11 24.2	N. 34 13	61 N. 8 S.
12	♄ Capricor.	4	11 15 38	20 58 5.37	S. 17 47 11.4	S. 13 14	23 N. 58 S.
12	♄ Capricor.	4½	19 48 18	21 14 27.75	S. 17 25 42.1	N. 60 21	73 N. 21 N.
13	♄ Capricor.	5	12 28 9	21 45 40.53	14 12 30.4	N. 65 47	76 N. 28 N.
14	67 Aquarii -	6	16 9 10	22 35 56.28	S. 7 41 35.6	N. 34 38	81 N. 11 S.
16	♄ Piscium -	5	1 15 17	23 34 54.86	N. 1 0 38.4	S. 28 59	16 N. 76 S.
18	♄ Piscium -	3½	12 6 31	1 23 59.90	N. 14 37 24.7	S. 38 36	7 N. 75 S.
18	101 Piscium -	6	14 17 20	1 28 17.73	N. 13 56 44.0	N. 29 58	77 N. 11 S.
20	♄ Arietis -	4½	5 46 15	2 51 12.52	20 46 43.0	N. 70 24	90 N. 44 N.
21	17 Tauri -	4	1 23 0	3 36 33.67	23 40 16.6	N. 66 5	90 N. 40 N.
21	19 Tauri -	5	1 30 47	3 36 52.28	24 1 32.3	N. 45 47	90 N. 16 N.
21	20 Tauri -	5	1 46 23	3 37 29.54	N. 23 55 40.6	N. 53 34	90 N. 24 N.
21	♄ Tauri -	5	15 47 42	4 11 44.16	N. 27 0 49.7	S. 42 6	2 N. 63 S.
22	♄ Tauri -	2	17 21 8	5 17 25.57	28 29 10.1	S. 48 13	4 S. 62 S.
23	136 Tauri -	5	3 33 28	5 44 30.62	27 34 33.9	N. 6 19	50 N. 10 S.
24	♄ Geminor.	3½	21 16 30	7 35 58.00	24 43 58.2	S. 32 36	14 N. 57 S.
25	♄ Cancri -	5	6 17 19	7 59 29.85	N. 21 59 22.8	N. 44 18	90 N. 8 N.

ELEMENTS OF OCCULTATIONS, 1859. 481

Month and Day.	Star's Name.	Magnitude.	Greenwich	At Greenwich Mean Time of ♄			Limiting Parallels.
			Mean Time of Apparent ♂ in R.A. of ♄ and ♀.	Apparent R.A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.	
			h m s	h m s	° ' "	° ' "	Latitude.
Aug. 25	♄ Canceri - -	4	20 51 22	8 36 41.97	N. 18 40 9.9	N. 74 9	90° N. 38° N.
30	♌ Virginis - -	5	3 46 20	12 32 0.23	S. 7 13 19.3	S. 38 50	9° N. 86° S.
30	♌ Virginis - -	5	10 43 3	12 47 3.15	8 46 33.8	S. 56 11	9° S. 90° S.
Sept. 2	♏ Scorpii - -	5	17 25 51	15 42 33.15	25 19 26.0	N. 16 31	41° N. 27° S.
2	A Scorpii - -	5	18 34 52	15 45 12.12	S. 24 54 26.7	S. 16 11	10° N. 61° S.
2	♏ Scorpii - -	3	20 49 31	15 50 22.56	S. 25 42 33.8	N. 17 28	41° N. 26° S.
3	B.A.C. 5347	5	0 48 53	15 59 35.29	25 57 1.5	N. 7 57	31° N. 36° S.
3	♏ Scorpii - -	3½	6 28 16	16 12 40.48	25 15 17.5	S. 63 50	44° S. 90° S.
3	♏ Scorpii - -	1½	9 59 11	16 20 49.14	26 7 10.8	S. 28 17	5° S. 78° S.
3	♏ Scorpii - -	3½	12 43 29	16 27 9.97	S. 27 55 25.6	N. 68 29	62° N. 42° N.
4	A Ophiuchi	5	5 48 23	17 6 44.35	S. 26 23 40.2	S. 70 13	62° S. 90° S.
4	♏ Sagittarii	5	19 42 46	17 38 44.77	27 46 32.2	N. 5 37	20° N. 38° S.
5	B.A.C. 6127	5	4 41 41	17 59 13.04	28 28 14.0	N. 57 16	62° N. 22° N.
5	♏ Sagittarii	3½	21 30 23	18 36 54.92	27 7 59.3	N. 24 59	46° N. 18° S.
6	♏ Sagittarii	2½	1 53 34	18 46 35.48	S. 26 28 7.3	N. 3 40	25° N. 40° S.
6	♏ Sagittarii	5	11 14 27	19 6 57.85	S. 25 29 43.4	S. 7 22	17° N. 52° S.
6	♏ Sagittarii	4½	21 9 45	19 28 11.57	25 11 25.2	N. 35 47	63° N. 7° S.
8	♏ Capricor.	4	17 36 19	20 58 5.38	17 47 11.7	S. 12 24	24° N. 57° S.
9	♏ Capricor.	4½	2 8 54	21 14 27.80	17 25 42.3	N. 60 59	73° N. 22° N.
9	42 Capricor.	6	12 29 9	21 33 57.01	S. 14 40 8.6	N. 16 36	55° N. 27° S.
9	44 Capricor.	6	13 17 21	21 35 27.04	S. 15 2 17.5	N. 48 26	75° N. 5° N.
9	♏ Capricor.	5	18 47 23	21 45 40.65	S. 14 12 30.1	N. 65 56	76° N. 28° N.
12	♏ Piscium - -	5	7 13 42	23 34 55.22	N. 1 0 41.3	S. 31 9	14° N. 79° S.
12	21 Piscium - -	6	11 19 43	23 42 18.52	0 17 57.2	N. 69 37	90° N. 31° N.
14	♏ Piscium - -	3½	17 38 34	1 24 0.51	N. 14 37 28.9	S. 43 8	2° N. 71° S.
16	♈ Arietis - -	4½	11 20 48	2 51 13.33	N. 20 46 46.8	N. 64 39	90° N. 35° N.
17	17 Tauri - -	4	7 10 2	3 36 34.52	23 40 19.7	N. 59 59	90° N. 33° N.
17	19 Tauri - -	5	7 17 57	3 36 53.14	24 1 35.5	N. 39 41	90° N. 10° N.
17	20 Tauri - -	5	7 33 45	3 37 30.39	23 55 43.8	N. 47 28	90° N. 18° N.
17	23 Tauri - -	5	7 47 3	3 38 1.75	N. 23 30 39.3	N. 74 8	90° N. 60° N.
17	♏ Tauri - -	3	8 16 8	3 39 10.36	N. 23 40 14.8	N. 68 2	90° N. 45° N.
17	28 Tauri - -	5½	8 59 10	3 40 52.09	23 42 27.8	N. 70 55	90° N. 50° N.
17	♏ Tauri - -	5	21 49 15	4 11 45.06	27 0 52.2	S. 48 21	5° S. 63° S.
18	♏ Tauri - -	2	23 59 6	5 17 26.49	28 29 11.0	S. 54 34	13° S. 62° S.
19	136 Tauri - -	5	10 29 21	5 44 31.53	N. 27 34 34.3	N. 0 1	44° N. 15° S.
20	52 Geminor.	6	17 57 17	7 6 7.45	N. 25 7 29.9	N. 27 22	74° N. 0
21	♏ Geminor.	3½	5 37 31	7 35 58.79	24 43 56.2	S. 38 10	8° N. 62° S.
21	♏ Canceri - -	5	14 57 19	7 59 30.54	21 59 20.7	N. 39 2	90° N. 4° N.
22	♄ Canceri - -	4	6 0 51	8 36 42.60	18 40 7.6	N. 69 31	90° N. 33° N.
23	SATURN - -	-	7 14 4	9 36 41.33	N. 15 16 53.3	S. 73 53	29° S. 75° S.
23	♏ Leonis - -	5	13 17 15	9 50 40.13	N. 13 6 49.8	S. 36 29	12° N. 74° S.
23	A Leonis - -	5	17 33 39	10 0 27.05	10 41 7.0	N. 42 5	90° N. 4° S.
23	♏ Leonis - -	1½	17 45 17	10 0 53.60	12 39 9.7	S. 79 3	37° S. 77° S.
24	d Leonis - -	5	17 7 27	10 53 18.46	N. 4 22 16.0	N. 31 55	75° N. 16° S.
30	♏ Scorpii - -	5	2 10 1	15 42 32.74	S. 25 19 24.3	N. 25 0	49° N. 19° S.

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Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ☉ in R. A. of ☿ and ♄.	At Greenwich Mean Time of ☿			Limiting Parallels.
				Apparent R. A. of ☿ and ♄.	Apparent Declination of ♄.	Diff. of Apparent Dec. of ☿ and ♄.	
			h m s	h m s	° ' "	☿	Latitude.
Sept. 30	A Scorpii -	5	3 17 24	15 45 11.72	S. 24 54 25.1	S. 7 40	18 N. 51 S.
30	π Scorpii -	3	5 28 51	15 50 22.14	25 42 32.2	N. 26 3	49 N. 18 S.
30	B.A.C. 5347	5	9 22 36	15 59 34.87	25 57 0.0	N. 16 39	39 N. 27 S.
30	σ Scorpii -	3½	14 54 13	16 12 40.06	25 15 16.2	S. 54 59	31 S. 90 S.
30	α Scorpii -	1½	18 20 26	16 20 48.71	S. 26 7 9.5	S. 19 22	4 N. 65 S.
Oct. 1	A Ophiuchi	5	13 45 19	17 6 43.88	S. 26 23 39.5	S. 60 57	45 S. 90 S.
2	3 Sagittarii	5	3 25 23	17 38 44.27	27 46 31.9	N. 15 1	30 N. 28 S.
2	B.A.C. 6127	5	12 16 27	17 59 12.55	28 28 13.6	N. 66 44	62 N. 40 N.
3	ρ Sagittarii	3½	4 53 28	18 36 54.44	27 7 59.8	N. 34 28	57 N. 8 S.
3	σ Sagittarii	2½	9 14 15	18 46 35.03	S. 26 28 7.8	N. 13 7	35 N. 30 S.
3	ψ Sagittarii	5	18 30 53	19 6 57.42	S. 25 29 44.2	N. 2 1	26 N. 41 S.
4	h Sagittarii	4½	4 22 52	19 28 11.14	25 11 26.2	N. 45 2	65 N. 4 N.
6	θ Capricor.	4	0 45 50	20 58 5.10	17 47 12.8	S. 4 29	31 N. 48 S.
6	ι Capricor.	4½	9 18 53	21 14 27.56	17 25 43.4	N. 68 29	73 N. 35 N.
7	μ Capricor.	5	1 58 13	21 45 40.47	S. 14 12 31.0	N. 72 29	76 N. 43 N.
7	ε Aquarii -	6	11 25 36	22 3 4.39	S. 11 30 26.9	N. 29 6	71 N. 16 S.
9	λ Piscium -	5	14 14 36	23 34 55.30	N. 1 0 42.4	S. 29 42	16 N. 76 S.
11	η Piscium -	3½	23 58 27	1 24 0.88	14 37 31.9	S. 47 43	2 S. 75 S.
13	μ Arietis -	5½	9 33 12	2 34 29.80	19 24 55.6	N. 62 26	90 N. 30 N.
13	ε Arietis -	4½	17 4 11	2 51 13.90	N. 20 46 49.7	N. 56 21	90 N. 24 N.
14	16 Tauri -	5½	12 38 6	3 36 30.37	N. 23 50 54.5	N. 39 28	90 N. 10 N.
14	17 Tauri -	4	12 40 9	3 36 35.23	23 40 22.3	N. 50 16	90 N. 21 N.
14	19 Tauri -	5	12 47 59	3 36 53.85	24 1 38.1	N. 29 57	79 N. 1 N.
14	20 Tauri -	5	13 3 40	3 37 31.11	23 55 46.3	N. 37 43	90 N. 8 N.
14	23 Tauri -	5	13 16 51	3 38 2.46	N. 23 30 41.8	N. 64 22	90 N. 39 N.
14	η Tauri -	3	13 45 40	3 39 11.08	N. 23 40 17.2	N. 58 14	90 N. 30 N.
14	27 Tauri -	4	14 27 50	3 40 51.63	23 37 28.5	N. 66 3	90 N. 42 N.
15	ρ Tauri -	5	3 13 5	4 11 45.89	27 0 54.5	S. 58 59	19 S. 63 S.
16	β Tauri -	2	5 21 45	5 17 27.42	28 29 11.8	S. 66 27	32 S. 62 S.
16	136 Tauri -	5	15 55 42	5 44 32.45	N. 27 34 34.4	S. 12 15	31 N. 27 S.
17	ε Geminor.	3½	11 42 44	6 35 19.60	N. 25 16 2.3	N. 72 27	90 N. 55 N.
17	37 Geminor.	6	16 10 23	6 46 42.47	25 32 53.8	N. 34 0	85 N. 8 N.
18	κ Geminor.	3½	11 45 48	7 35 59.67	24 43 53.8	S. 51 7	7 S. 65 S.
18	μ Canceri -	5	21 19 49	7 59 31.39	21 59 18.0	N. 26 10	71 N. 7 S.
19	δ Canceri -	4	12 49 9	8 36 43.38	N. 18 40 4.4	N. 57 1	90 N. 19 N.
20	ν Leonis -	5	21 5 38	9 50 40.78	N. 13 6 46.2	S. 47 7	1 N. 69 S.
21	A Leonis -	5	1 30 23	10 0 27.70	10 41 3.4	N. 31 50	76 N. 13 S.
22	d Leonis -	5	1 48 1	10 53 18.98	N. 4 22 13.0	N. 24 14	67 N. 22 S.
22	ν Leonis -	4½	18 50 17	11 29 45.93	S. 0 2 55.9	N. 7 57	50 N. 36 S.
23	χ Virginis -	5	23 55 22	12 32 0.51	S. 7 13 19.8	S. 36 32	10 N. 83 S.
27	b Scorpii -	5	11 44 13	15 42 32.56	S. 25 19 22.6	N. 34 31	59 N. 9 S.
27	A Scorpii -	5	12 50 42	15 45 11.53	24 54 23.4	N. 1 58	27 N. 41 S.
27	π Scorpii -	3	15 0 21	15 50 21.94	25 42 30.5	N. 35 53	60 N. 8 S.
27	B.A.C. 5347	5	18 50 49	15 59 34.66	25 56 58.3	N. 26 50	49 N. 17 S.
28	σ Scorpii -	3½	0 17 32	16 12 39.81	S. 25 15 14.6	S. 44 20	19 S. 90 S.

ELEMENTS OF OCCULTATIONS, 1859. 483

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♂ in R.A. of ☾ and ♀.	At Greenwich Mean Time of ☾			Limiting Parallels.
			Apparent R.A. of ☾ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ☾ and ♀.		
			h m s	h m s	° ' "	° ' "	Latitude. °
Oct. 28	α Scorpii -	1½	3 40 36	16 20 48.44	S. 26 7 7.9	S. 8 26	14 N. 52 S.
28	A Ophiuchi	5	22 46 56	17 6 43.54	26 23 38.2	S. 48 35	30 S. 90 S.
29	3 Sagittarii	5	12 13 55	17 38 43.88	27 46 30.8	N. 28 15	44 N. 14 S.
30	φ Sagittarii	3½	13 20 7	18 36 54.00	27 7 59.5	N. 48 59	63 N. 9 N.
30	σ Sagittarii	2½	17 37 41	18 46 34.58	S. 26 28 7.6	N. 27 49	50 N. 15 S.
31	ψ Sagittarii	5	2 48 5	19 6 56.95	S. 25 29 44.3	N. 17 3	41 N. 26 S.
31	h Sagittarii	4½	12 34 31	19 28 10.69	25 11 26.5	N. 60 22	65 N. 25 N.
Nov. 1	4 Capricor.	6	8 26 56	20 9 47.75	22 14 26.6	N. 39 35	68 N. 3 S.
2	θ Capricor.	4	8 46 42	20 58 4.70	S. 17 47 14.0	N. 11 8	46 N. 32 S.
5	λ Piscium -	5	22 32 7	23 34 55.17	N. 1 0 42.1	S. 19 38	25 N. 63 S.
8	γ Piscium -	3½	8 2 43	1 24 1.03	N. 14 37 33.4	S. 45 24	0 75 S.
8	101 Piscium -	6	10 9 42	1 28 18.89	13 56 52.5	N. 22 34	67 N. 17 S.
10	ε Arietis -	4½	0 31 46	2 51 14.30	20 46 51.7	N. 52 45	90 N. 19 N.
10	17 Tauri - -	4	19 44 12	3 36 35.75	23 40 24.1	N. 44 3	90 N. 14 N.
10	19 Tauri - -	5	19 51 52	3 36 54.37	N. 24 1 40.0	N. 23 43	69 N. 5 S.
10	20 Tauri - -	5	20 7 12	3 37 31.62	N. 23 55 48.2	N. 31 27	80 N. 2 N.
10	23 Tauri - -	5	20 20 6	3 38 2.98	23 30 43.6	N. 58 5	90 N. 30 N.
10	γ Tauri - -	3	20 48 19	3 39 11.60	23 40 19.0	N. 51 53	90 N. 23 N.
10	27 Tauri - -	4	21 29 36	3 40 52.16	23 37 30.3	N. 59 36	90 N. 32 N.
11	φ Tauri - -	5	9 58 32	4 11 46.51	N. 27 0 56.3	S. 67 0	32 S. 63 S.
11	χ Tauri - -	5½	10 53 53	4 14 5.67	N. 25 17 51.8	N. 40 48	90 N. 15 N.
12	136 Tauri - -	5	21 56 34	5 44 33.27	27 34 34.6	S. 24 16	20 N. 39 S.
13	ε Geminor.	3½	17 25 3	6 35 20.48	25 16 1.1	N. 58 37	90 N. 34 N.
14	κ Geminor.	3½	17 14 40	7 36 0.60	24 43 51.3	S. 66 45	27 S. 65 S.
15	μ Canceri -	5	2 46 41	7 59 32.34	N. 21 59 14.8	N. 9 59	53 N. 21 S.
15	δ Canceri -	4	18 17 12	8 36 44.28	N. 18 40 0.6	N. 40 11	90 N. 2 N.
17	ν Leonis - -	5	2 53 45	9 50 41.65	13 6 41.3	S. 64 3	18 S. 77 S.
17	A Leonis - -	5	7 22 55	10 0 28.52	10 40 58.6	N. 15 2	57 N. 27 S.
18	d Leonis - -	5	8 10 47	10 53 19.74	N. 4 22 8.3	N. 8 52	51 N. 35 S.
19	υ Leonis - -	4½	1 38 26	11 29 46.66	S. 0 3 0.3	S. 5 44	38 N. 48 S.
20	χ Virginis -	5	7 29 5	12 32 1.12	S. 7 13 23.1	S. 46 18	0 90 S.
20	ψ Virginis -	5	14 36 54	12 47 3.93	8 46 36.7	S. 60 58	16 S. 90 S.
25	3 Sagittarii	5	21 9 8	17 38 43.78	27 46 29.5	N. 37 53	58 N. 4 S.
26	λ Sagittarii	3	14 26 9	18 19 18.99	25 29 49.5	S. 65 10	50 S. 90 S.
26	φ Sagittarii	3½	22 4 52	18 36 53.78	S. 27 7 58.6	N. 61 14	63 N. 27 N.
27	σ Sagittarii	2½	2 20 25	18 46 34.34	S. 26 28 6.8	N. 40 28	63 N. 1 S.
27	ψ Sagittarii	5	11 26 28	19 6 56.69	25 29 43.8	N. 30 33	56 N. 12 S.
29	θ Capricor.	4	17 7 36	20 58 4.35	17 47 15.0	N. 28 18	64 N. 15 S.
Dec. 1	θ Aquarii -	4½	7 27 51	22 9 26.90	S. 8 28 44.3	S. 75 33	53 S. 90 S.
3	λ Piscium -	5	7 23 45	23 34 54.90	N. 1 0 40.8	S. 3 23	40 N. 46 S.
5	γ Piscium -	3½	17 28 38	1 24 0.96	N. 14 37 33.6	S. 35 6	10 N. 73 S.
7	ε Arietis -	4½	9 59 22	2 51 14.43	20 46 52.5	N. 57 18	90 N. 24 N.
8	16 Tauri - -	5½	5 0 9	3 36 31.17	23 50 57.6	N. 34 57	86 N. 6 N.
8	17 Tauri - -	4	5 2 7	3 36 36.02	23 40 25.3	N. 45 44	90 N. 16 N.

484 ELEMENTS OF OCCULTATIONS, 1859.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♂ in R. A. of ♄ and ♀.		At Greenwich Mean Time of ♄			Limiting Parallels.
			♄	♂	Apparent R. A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.	
			h m s	h m s	° ' "	♄	Latitude.	
Dec. 8	20 Tauri - -	5	5 24 53	3 37 31.91	N. 23 55 49.4	N. 33 5	83 N. 4 N.	
8	23 Tauri - -	5	5 37 38	3 38 3.27	23 30 44.7	N. 59 41	90 N. 32 N.	
8	7 Tauri - -	3	6 5 30	3 39 11.89	23 40 20.1	N. 53 25	90 N. 24 N.	
8	27 Tauri - -	4	6 46 18	3 40 52.45	23 37 31.4	N. 61 2	90 N. 33 N.	
8	28 Tauri - -	5½	6 46 46	3 40 53.63	N. 23 42 33.2	N. 56 4	90 N. 27 N.	
8	♄ Tauri - -	5	19 4 43	4 11 46.88	N. 27 0 57.7	S. 67 24	32 S. 63 S.	
10	136 Tauri - -	5	6 17 55	5 44 33.92	27 34 34.9	S. 29 44	15 N. 45 S.	
11	♄ Geminor. 3½	1	15 43	6 35 21.24	25 16 0.3	N. 50 34	90 N. 24 N.	
11	48 Geminor. 6	12	4 41	7 3 58.00	24 21 36.3	N. 41 40	90 N. 12 N.	
12	♄ Geminor. 3½	0	25 39	7 36 1.47	N. 24 43 49.2	S. 77 44	52 S. 65 S.	
12	♄ Cancri -	5	9 42 3	7 59 33.20	N. 21 59 12.0	S. 2 4	41 N. 31 S.	
13	♄ Cancri -	4	0 48 38	8 36 45.20	18 39 56.7	N. 26 36	71 N. 11 S.	
13	♄ Cancri -	6	13 46 51	9 7 31.39	15 31 11.1	N. 47 35	90 N. 5 N.	
14	♄ Leonis -	5	8 45 14	9 50 42.56	13 6 36.2	S. 79 58	43 S. 77 S.	
14	A Leonis -	5	13 10 24	10 0 29.43	N. 10 40 53.4	S. 1 5	42 N. 41 S.	
15	d Leonis -	5	13 43 58	10 53 20.64	N. 4 22 2.6	S. 7 39	36 N. 49 S.	
15	p Leonis -	6	16 47 12	10 59 46.54	N. 2 42 51.2	N. 42 39	90 N. 5 S.	
16	♄ Leonis -	4½	7 9 51	11 29 47.54	S. 0 3 5.9	S. 21 52	24 N. 64 S.	
17	♄ Virginis -	5	13 12 38	12 32 1.97	7 13 28.2	S. 60 34	15 S. 90 S.	
17	♄ Virginis -	5	20 25 46	12 47 4.76	S. 8 46 41.5	S. 74 35	36 S. 90 S.	
21	♄ Scorpii -	5	3 54 42	15 42 33.35	S. 25 19 22.2	N. 33 47	59 N. 10 S.	
21	A Scorpii -	5	5 2 39	15 45 12.30	24 54 23.2	N. 1 32	26 N. 41 S.	
21	♄ Scorpii -	3	7 15 6	15 50 22.69	25 42 29.8	N. 36 1	60 N. 7 S.	
21	B.A.C. 5347	5	11 10 13	15 59 35.35	25 56 57.5	N. 28 0	51 N. 15 S.	
21	♄ Scorpii -	3½	16 42 51	16 12 40.43	S. 25 15 13.9	S. 41 44	17 S. 90 S.	
21	♄ Scorpii -	1½	20 9 13	16 20 49.02	S. 26 7 6.8	S. 4 58	16 N. 48 S.	
25	VENUS -	-	16 41 16	19 52 48.68	22 28 20.8	N. 7 20	37 N. 36 S.	
27	♄ Capricor. 4	1	2 27	20 58 4.18	17 47 15.4	N. 39 4	72 N. 4 S.	
28	♄ Aquarii -	4½	15 22 47	22 9 26.66	S. 8 28 45.6	S. 62 27	24 S. 90 S.	
30	♄ Piscium -	4½	7 5 14	23 19 45.68	N. 0 29 25.8	S. 74 53	45 S. 90 S.	
30	♄ Piscium -	5	15 40 48	23 34 54.62	N. 1 0 39.0	N. 10 37	54 N. 33 S.	

OCCULTATIONS OF PLANETS AND FIXED STARS BY THE MOON, VISIBLE AT GREENWICH.

* * The Angles are reckoned towards the right hand round the circumference of the Moon's image
as seen in an inverting telescope.

Month and Day.	Star's Name.	Magnitude.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Ver- tex.			N. Point.	Ver- tex.
Jan. 14	19 Tauri - -	5	h m 6 56	h m 11 21	° 18	° 59	h m 7 6	h m 11 30	° 2	° 44
14	20 Tauri - -	5	7 18†	11 42	10	52				
16	136 Tauri - -	5	4 37	8 54	76	53	5 47	10 3	284	286
17	A Geminorum	5½	14 15†	18 26	164	201				
18	μ ¹ Cancri - -	6	3 53	8 2	58	16	4 54	9 3	276	237
18	γ Cancri - -	6	15 55	20 2	130	165	16 18	20 25	189	223
20	44 Leonis - -	6	14 59	18 59	114	152	15 32	19 32	186	225
21	B.A.C. 3836 -	6	13 14	17 10	33	56	14 16	18 12	257	287
21	75 Leonis - -	6	14 59	18 55	97	131	15 46	19 41	199	236
21	76 Leonis - -	6	15 55	19 50	76	113	16 49	20 44	224	263
24	83 Virginis - -	6	15 6†	18 49	151	165				
Feb. 5	B.A.C. 8094 -	6	4 16	7 15	116	153	5 15†	8 13	303	341
14	κ Geminorum	3½	10 3†	12 26	158	195				
15	γ Cancri - -	6	3 21†	5 40	346	304				
15	39 Cancri - -	6	6 22	8 41	32	1	7 18	9 36	285	264
15	40 Cancri - -	6	6 29	8 48	25	354	7 19	9 38	292	272
16	ψ Leonis - -	6	8 35	10 49	89	75	9 35	11 49	208	208
17	37 Sextantis -	6	13 22†	15 32	146	175				
18	79 Leonis - -	6	4 53†	7 0	48	9	5 46	7 53	257	219
18	ν Leonis - -	4½	12 35	14 41	31	43	13 39	15 44	255	278
23	4 Scorpii - -	6	13 17†	15 4	158	136				
Mar. 13	A Geminorum	5½	12 7	12 43	110	153	12 51	13 26	213	255
14	γ Cancri - -	6	15 36	16 7	125	162	16 3	16 34	193	227
16	44 Leonis - -	6	16 23†	16 46	152	191				
17	B.A.C. 3836 -	6	14 27	14 47	57	89	15 29	15 48	238	274
17	75 Leonis - -	6	16 16	16 36	121	158	16 44	17 3	181	219
17	76 Leonis - -	6	17 1	17 20	88	127	17 48†	18 7	217	255
20	83 Virginis - -	6	12 45	12 53	121	112	13 18	13 25	173	170
Apr. 6	20 Tauri - -	5	7 53†	6 55	8	51				
8	136 Tauri - -	5	8 49	7 43	122	164	9 40	8 34	222	267
13	37 Sextantis -	6	10 10	8 44	103	96	10 57	9 30	184	188
14	ν Leonis - -	4½	11 6	9 36	4	359	11 53	10 23	281	286
18	B.A.C. 4984 -	6	15 14	13 28	45	47	16 27	14 41	271	284
May 8	SATURN - -	-	11 24	8 19	39	75	12 23	9 18	265	306
10	48 Leonis - -	6	13 44	10 31	37	71	14 44	11 31	257	294
11	76 Leonis - -	6	9 44	6 28	47	30	10 56	7 40	239	236
23	μ Capricorni -	5	19 51	15 46	162	144	20 52	16 47	260	251
June 15	B.A.C. 6127 -	5	14 37†	9 3	45	16	15 34	10 0	308	286
26	ε Arietis - -	4½	18 44†	12 26	101	69	19 32	13 13	298	262
July 9	B.A.C. 4984 -	6	17 14	10 5	96	116	18 25	11 15	234	263

OCCULTATIONS OF PLANETS AND FIXED STARS BY THE MOON, VISIBLE AT GREENWICH.

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Month and Day.	Star's Name.	Magnitude.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Ver- tex.			N. Point.	Ver- tex.
July 16	♄ Capricorni -	4½	h m 20 38	h m 13 1	° 84	° 78	h m 21 43	h m 14 5	° 340	° 345
17	♈ Aquarii -	6	0 23	16 41	182	204	1 4	17 22	249	276
Aug. 13	♄ Capricorni -	5	21 27	11 59	44	40	21 39	12 12	26	24
14	♈ Aquarii -	6	2 12	16 40	102	133	3 13	17 41	313	359
18	♐ Piscium -	6	23 19	13 31	167	140	0 12	14 25	260	242
Sept. 9	♄ Capricorni -	6	1 1†	13 46	213	243				
9	♄ Capricorni -	6	1 7	13 53	49	80	1 27	14 13	14	46
12	♐ Piscium -	6	21 49†	10 23	37	16				
16	♈ Arietis -	4½	21 36	9 55	40	358	21 51	10 10	9	327
17	♉ Tauri -	5½	19 39†	7 54	16	343				
20	♊ Geminorum	6	4 55	16 56	70	36	6 7	18 9	269	250
21	♈ Arietis -	5	1 31	13 29	58	18	2 22	14 21	282	240
23	♌ Leonis -	5	4 30	16 20	14	335	5 4	16 54	299	260
24	♌ Leonis -	5	3 51†	15 37	54	17	4 42	16 28	256	217
Oct. 6	♄ Capricorni -	4½	22 22†	9 22	33	44				
7	♈ Aquarii -	6	1 1	11 56	136	163	2 8	13 4	291	324
13	♈ Arietis -	5½	21 27	7 59	63	22	22 4	8 36	348	308
14	♉ Tauri -	5½	0 59	11 27	85	48	2 4	12 32	316	290
14	♉ Tauri -	5	1 15	11 43	115	80	2 28	12 56	286	265
14	♉ Tauri -	4	1 27†	11 55	21	347				
14	♉ Tauri -	5	1 32	12 0	83	51	2 39	13 7	317	298
17	♊ Geminorum	6	5 8	15 24	46	16	6 9	16 24	297	285
19	♈ Arietis -	4	1 43†	11 52	346	309				
Nov. 1	♄ Capricorni -	6	23 36	8 54	105	135	0 42†	9 59	308	343
8	♐ Piscium -	6	1 5	9 54	165	159	2 1	10 51	260	268
11	♉ Tauri -	5½	1 1	9 39	76	35	2 0	10 38	316	281
13	♊ Geminorum	3½	9 48†	18 16	345	26				
15	♈ Arietis -	4	9 54	18 14	59	79	11 3	19 23	244	277
Dec. 8	♉ Tauri -	4	20 44	3 36	127	89	21 33	4 25	268	228
8	♉ Tauri -	5½	21 7	4 0	187	148	21 17	4 9	208	168
8	♉ Tauri -	5	21 14	4 6	70	30	21 56	4 49	327	286
8	♉ Tauri -	5	21 37†	4 29	198	157				
8	♉ Tauri -	3	21 40	4 32	87	46	22 32	5 24	310	268
8	♉ Tauri -	5½	22 25	5 18	65	22	23 7	5 59	334	291
8	♉ Tauri -	4	22 40	5 32	25	342	22 46	5 38	14	331
11	♊ Geminorum	6	4 47	11 27	6	332	5 6	11 45	335	303
13	♈ Arietis -	6	6 49†	13 21	336	306				
15	♌ Leonis -	6	9 37	16 0	47	31	10 48	17 10	241	239

† A near approach.

† Star below the horizon.

MEAN TIME.

JANUARY.

d	h	m	s	d	h	m	s	d	h	m	s
II. Tr. I.	1	3	45	II. Sh. E. *	8	10	8	I. Tr. E.	15	18	52
II. Sh. I. *	4	56		I. Tr. I. *	14	51		I. Sh. E.	19	46	
II. Tr. E. *	6	18		I. Sh. I. *	15	36		III. Tr. I. *	16	11	41
II. Sh. E. *	7	30		I. Tr. E. †	17	5		I. Oc. D. *	13	45	
I. Tr. I. *	13	5		I. Sh. E.	17	51		III. Tr. E. *	14	15	
I. Sh. I. *	13	41		III. Tr. I. *	9	8	13	III. Sh. I. *	15	19	
I. Tr. E. *	15	19		III. Tr. E. *	10	46		I. Ec. R. †	16	52	40.5
I. Sh. E. *	15	56		III. Sh. I. *	11	19		III. Sh. E.	17	59	
III. Tr. I. †	2	4	50	I. Oc. D. *	11	58		II. Oc. D.	17	3	26
III. Sh. I. *	7	18		III. Sh. E. *	13	57		II. Ec. R. *	7	47	10.0
III. Tr. E. *	7	22		I. Ec. R. *	14	57	15.5	I. Tr. I. *	11	4	
III. Sh. E. *	9	56		II. Oc. D.	10	1	6	I. Sh. I. *	12	0	
I. Oc. D. *	10	12		II. Ec. R. *	5	11	7.5	I. Tr. E. *	13	19	
I. Ec. R. *	13	1	58.0	I. Tr. I. *	9	17		I. Sh. E. *	14	15	
II. Oc. D.	22	48		I. Sh. I. *	10	5		I. Oc. D. *	18	8	12
II. Ec. R.	3	2	35 2.1	I. Tr. E. *	11	31		I. Ec. R. *	11	21	30.7
I. Tr. I. *	7	31		I. Sh. E. *	12	20		II. Tr. I.	21	36	
I. Sh. I. *	8	10		I. Oc. D. *	11	6	25	II. Sh. I.	23	29	
I. Tr. E. *	9	45		I. Ec. R. *	9	26	4.0	II. Tr. E.	19	0	10
I. Sh. E. *	10	25		II. Tr. I.	19	14		II. Sh. E.	2	4	
I. Oc. D. †	4	4	39	II. Sh. I.	20	52		I. Tr. I. *	5	31	
I. Ec. R. *	7	30	44.5	II. Tr. E.	21	47		I. Sh. I. *	6	29	
II. Tr. I. †	16	54		II. Sh. E.	23	26		I. Tr. E. *	19	7	46
II. Sh. I.	18	14		I. Tr. I.	12	3	44	I. Sh. E. *	8	43	
II. Tr. E.	19	27		I. Sh. I. †	4	34		III. Oc. D.	20	1	24
II. Sh. E.	20	49		I. Tr. E. *	5	58		I. Oc. D.	2	39	
I. Tr. I.	5	1	58	I. Sh. E. *	6	49		III. Oc. R.	3	58	
I. Sh. I.	2	39		III. Oc. D.	21	54		III. Ec. D. *	5	23	9.5
I. Tr. E. †	4	12		III. Oc. R.	13	0	27	I. Ec. R. *	5	50	25.7
I. Sh. E. †	4	53		I. Oc. D.	0	52		III. Ec. R. *	7	52	37.1
III. Oc. D.	18	30		III. Ec. D.	1	22	39.8	II. Oc. D. †	16	37	
III. Oc. R.	21	1		I. Ec. R.	3	51	5.1	II. Ec. R.	21	5	8.2
III. Ec. D.	21	22	23.6	II. Oc. D. *	14	15		I. Tr. I.	23	58	
I. Oc. D.	23	5		II. Ec. R.	18	29	6.3	I. Sh. I.	21	0	57
III. Ec. R.	23	49	46.6	I. Tr. I.	22	11		I. Tr. E.	2	13	
I. Ec. R.	6	1	59 35.6	I. Sh. I.	23	2		I. Sh. E.	3	12	
II. Oc. D. *	11	56		I. Tr. E.	14	0	25	I. Oc. D.	21	7	
II. Ec. R. *	15	53	0.9	I. Sh. E.	1	17		I. Ec. R.	22	0	19 15.1
I. Tr. I.	20	24		I. Oc. D.	19	19		II. Tr. I. *	10	48	
I. Sh. I.	21	8		I. Ec. R.	22	23	45.0	II. Sh. I. *	12	48	
I. Tr. E.	22	38		II. Tr. I. *	15	8	25	II. Tr. E. *	13	22	
I. Sh. E.	23	22		II. Sh. I. *	10	11		II. Sh. E. *	15	23	
I. Oc. D. †	7	17	32	II. Tr. E. *	10	58		I. Tr. I.	18	25	
I. Ec. R.	20	18	21.9	II. Sh. E. *	12	46		I. Sh. I.	19	26	
II. Tr. I. *	8	6	4	I. Tr. I. †	16	37		I. Tr. E.	20	40	
II. Sh. I. *	7	33		I. Sh. I.	17	31		I. Sh. E.	21	41	
II. Tr. E. *	8	37									

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

JANUARY.

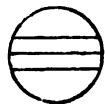
d h m s				d h m s				d h m s			
III. Tr. I. *	23	15	12	I. Sh. I. *	26	8	24	II. Tr. E. †	29	15	48
I. Oc. D. †	15	34		I. Tr. E. *	9	34		II. Sh. E.	18	1	
III. Tr. E.	17	47		I. Sh. E. *	10	39		I. Tr. I.	20	14	
I. Ec. R.	18	48	12.2	I. Oc. D.	27	4	29	I. Sh. I.	21	21	
III. Sh. I.	19	19		III. Oc. D. †	4	58		I. Tr. E.	22	29	
III. Sh. E.	22	0		III. Oc. R. *	7	35		I. Sh. E.	23	36	
II. Oc. D. *	24	5	48	I. Ec. R. *	7	46	0.6	I. Oc. D.	30	17	24
II. Ec. R. *	10	23	9.1	III. Ec. D. *	9	24	21.7	III. Tr. I.	18	48	
I. Tr. I. *	12	53		III. Ec. R. *	11	54	52.2	I. Ec. R.	20	43	49.9
I. Sh. I. *	13	55		II. Oc. D.	19	0		III. Tr. E.	21	25	
I. Tr. E. *	15	7		II. Ec. R.	23	41	6.6	III. Sh. I.	23	19	
I. Sh. E. †	16	10		I. Tr. I.	28	1	47	III. Sh. E.	31	2	1
I. Oc. D. *	25	10	1	I. Sh. I.	2	52		II. Oc. D. *	8	12	
I. Ec. R. *	13	17	3.9	I. Tr. E.	4	2		II. Ec. R. *	12	59	4.9
II. Tr. I.	26	0	0	I. Sh. E. †	5	7		I. Tr. I. *	14	42	
II. Sh. I.	2	6		I. Oc. D.	22	56		I. Sh. I. †	15	50	
II. Tr. E.	2	34		I. Ec. R.	29	2	14 51.4	I. Tr. E.	16	57	
II. Sh. E. †	4	42		II. Tr. I. *	13	14		I. Sh. E.	18	5	
I. Tr. I. *	7	20		II. Sh. I. †	15	26					

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.

r
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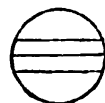
III.

d r
• •

II.

r
•

IV.

No Eclipse
of this Satellite.

FEBRUARY.

d h m s				d h m s				d h m s			
I. Oc. D. *	1	11	51	I. Oc. D. *	3	6	19	I. Tr. E. *	4	5	52
I. Ec. R. †	15	12	42.8	III. Oc. D. *	8	38		I. Sh. E. *	7	3	
II. Tr. I.	2	2	27	I. Ec. R. *	9	41	40.9	I. Oc. D.	5	0	47
II. Sh. I.	4	44		III. Oc. R. *	11	16		I. Ec. R.	4	10	32.7
II. Tr. E. †	5	2		III. Ec. D. *	13	25	12.3	II. Tr. I. †	15	42	
II. Sh. E. *	7	20		III. Ec. R.	15	56	46.0	II. Sh. I.	18	4	
I. Tr. I. *	9	9		II. Oc. D.	21	25		II. Tr. E.	18	17	
I. Sh. I. *	10	19		II. Ec. R.	4	2	17 1.1	II. Sh. E.	20	39	
I. Tr. E. *	11	24		I. Tr. I.	3	37		I. Tr. I.	22	5	
I. Sh. E. *	12	34		I. Sh. I.	4	48		I. Sh. I.	23	16	

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

FEBRUARY.

d h m s			d h m s			d h m s		
I. Tr. E.	6	0 19	I. Ec. R.	14	0 35 18.4	III. Tr. E. *	21	8 49
I. Sh. E.	1	31	III. Tr. I.	2	15	III. Sh. I. *	11	21
I. Oc. D.	19	15	III. Tr. E.	4	55	III. Sh. E. †	14	6
III. Tr. I.	22	29	III. Sh. I. *	7	20	II. Oc. D.	15	40
I. Ec. R.	22	39 32.3	III. Sh. E. *	10	4	II. Oc. R.	18	15
III. Tr. E.	7	1 8	II. Oc. D. *	13	8	II. Ec. D.	18	17 5.9
III. Sh. I.	3	19	II. Ec. R.	18	10 45.4	I. Tr. I.	20	17
III. Sh. E. *	6	2	I. Tr. I.	18	24	II. Ec. R.	20	46 29.5
II. Oc. D. *	10	39	I. Sh. I.	19	40	I. Sh. I.	21	35
II. Ec. R. †	15	34 56.9	I. Tr. E.	20	39	I. Tr. E.	22	32
I. Tr. I.	16	33	I. Sh. E.	21	55	I. Sh. E.	23	51
I. Sh. I.	17	45	I. Oc. D.	15	15 35	I. Oc. D.	22	17 29
I. Tr. E.	18	47	I. Ec. R.	19	4 13.2	I. Ec. R.	21	0 2.6
I. Sh. E.	20	0	II. Tr. I. *	16	7 29	II. Tr. I. *	23	10 4
I. Oc. D. *	8	13 43	II. Sh. I. *	10	1	II. Sh. I. *	12	39
I. Ec. R.	17	8 26.2	II. Tr. E. *	10	5	II. Tr. E. *	12	40
II. Tr. I.	9	4 57	II. Sh. E. *	12	36	I. Tr. I.	14	46
II. Sh. I. *	7	22	I. Tr. I. *	12	53	II. Sh. E.	15	15
II. Tr. E. *	7	32	I. Sh. I. †	14	9	I. Sh. I.	16	4
II. Sh. E. *	9	58	I. Tr. E.	15	7	I. Tr. E.	17	1
I. Tr. I. *	11	0	I. Sh. E.	16	24	I. Sh. E.	18	19
I. Sh. I. *	12	14	I. Oc. D. *	17	10 3	I. Oc. D. *	24	11 57
I. Tr. E. *	13	15	I. Ec. R. *	13	33 13.2	I. Ec. R.	15	29 3.2
I. Sh. E. †	14	29	III. Oc. D.	16	12	III. Oc. D.	20	5
I. Oc. D. *	10	8 10	III. Oc. R.	18	52	III. Oc. R.	22	48
I. Ec. R. *	11	37 25.4	III. Ec. D.	21	27 2.7	III. Ec. D.	25	1 27 36.0
III. Oc. D. *	12	22	III. Ec. R.	18	0 0 42.7	III. Ec. R.	4	2 19.7
III. Oc. R. †	15	2	II. Oc. D.	2	24	II. Oc. D.	4	56
III. Ec. D.	17	26 23.6	II. Oc. R.	4	59	II. Oc. R. *	7	32
III. Ec. R.	19	59 0.4	II. Ec. D.	4	59 20.6	II. Ec. D. *	7	34 51.8
II. Oc. D.	23	53	I. Tr. I. *	7	21	I. Tr. I. *	9	14
II. Ec. R.	11	4 52 52.0	II. Ec. R. *	7	28 38.8	II. Ec. R. *	10	4 21.2
I. Tr. I. †	5	28	I. Sh. I. *	8	38	I. Sh. I. *	10	33
I. Sh. I. *	6	43	I. Tr. E. *	9	36	I. Tr. E. *	11	29
I. Tr. E. *	7	43	I. Sh. E. *	10	53	I. Sh. E. *	12	48
I. Sh. E. *	8	58	I. Oc. D.	19	4 32	I. Oc. D. *	26	6 26
I. Oc. D.	12	2 39	I. Ec. R. *	8	2 6.3	I. Ec. R. *	9	57 56.4
I. Ec. R. *	6	6 17.9	II. Tr. I.	20	47	II. Tr. I.	23	23
II. Tr. I.	18	13	II. Sh. I.	23	20	II. Sh. I.	27	1 58
II. Sh. I.	20	42	II. Tr. E.	23	22	II. Tr. E.	1	58
II. Tr. E.	20	48	I. Tr. I.	20	1 49	I. Tr. I.	3	43
II. Sh. E.	23	18	II. Sh. E.	1	56	II. Sh. E.	4	34
I. Tr. I.	23	56	I. Sh. I.	3	7	I. Sh. I.	5	2
I. Sh. I.	13	1 12	I. Tr. E.	4	4	I. Tr. E. †	5	58
I. Tr. E.	2	11	I. Sh. E.	5	22	I. Sh. E. *	7	17
I. Sh. E.	3	27	I. Oc. D.	23	0	I. Oc. D.	28	0 55
I. Oc. D.	21	7	I. Ec. R.	21	2 31 7.3	I. Ec. R.	4	26 57.8
			III. Tr. I. †	6	7	III. Tr. I. *	10	3

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite. Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

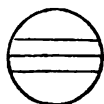
MEAN TIME.

FEBRUARY.

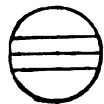
III. Tr. E.*	d h m s	II. Oc. D.	d h m s	I. Tr. I.	d h m s
28	12 46	28	18 13	28	22 12
III. Sh. I.	15 21	II. Oc. R.	20 49	II. Ec. R.	23 22 10.2
III. Sh. E.	18 7	II. Ec. D.	20 52 35.1	I. Sh. I.	23 31

Phases of the Eclipses of the Satellites for an inverting Telescope.

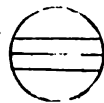
I.

r
*

III.

d r
* *

II.

r
*

IV.

No Eclipses
of this Satellite.

MARCH.

I. Tr. E.	d h m s	I. Oc. D.*	d h m s	II. Tr. I.	d h m s
1	0 27	5	8 22	9	15 20
I. Sh. E.	1 46	I. Ec. R.*	11 53 47.7	II. Sh. I.	17 55
I. Oc. D.	19 24	II. Tr. I.	6 2 1	II. Tr. E.	17 56
I. Ec. R.	22 55 53.3	II. Sh. I.	4 37	I. Tr. I.	18 36
II. Tr. I.*	2 12 41	II. Tr. E.	4 37	I. Sh. I.	19 55
II. Tr. E.	15 17	I. Tr. I.	5 38	II. Sh. E.	20 32
II. Sh. I.	15 17	I. Sh. I.*	6 57	I. Tr. E.	20 51
I. Tr. I.	16 40	II. Sh. E.*	7 13	I. Sh. E.	22 10
II. Sh. E.	17 53	I. Tr. E.*	7 53	I. Oc. D.	10 15 49
I. Sh. I.	18 0	I. Sh. E.*	9 12	I. Ec. R.	19.20 45.5
I. Tr. E.	18 55	I. Oc. D.	7 2 51	III. Oc. D.	11 4 7
I. Sh. E.	20 15	I. Ec. R.†	6 22 49.0	III. Oc. R.*	6 52
I. Oc. D.†	3 13 53	III. Tr. I.	14 4	III. Ec. D.*	9 29 2.3
I. Ec. R.	17 24 54.1	III. Tr. E.	16 48	II. Oc. D.*	10 7
III. Oc. D.	4 0 4	III. Sh. I.	19 22	III. Ec. R.*	12 5 52.9
III. Oc. R.	2 47	II. Oc. D.	20 49	II. Oc. R.†	12 44
III. Ec. D.	5 28 15.9	III. Sh. E.	22 9	II. Ec. D.†	12 45 41.1
II. Oc. D.*	7 31	II. Oc. R.	23 25	I. Tr. I.†	13 5
III. Ec. R.*	8 4 3.2	II. Ec. D.	23 27 59.8	I. Sh. I.	14 24
II. Oc. R.*	10 7	I. Tr. I.	8 0 7	II. Ec. R.	15 15 35.0
II. Ec. D.*	10 10 18.7	I. Sh. I.	1 26	I. Tr. E.	15 20
I. Tr. I.*	11 9	II. Ec. R.	1 57 47.2	I. Sh. E.	16 39
I. Sh. I.*	12 28	I. Tr. E.	2 22	I. Oc. D.*	12 10 18
II. Ec. R.*	12 39 59.9	I. Sh. E.	3 41	I. Ec. R.	13 49 38.9
I. Tr. E.†	13 24	I. Oc. D.	21 20	II. Tr. I.	13 4 40
I. Sh. E.	14 44	I. Ec. R.	9 0 51 44.5	II. Sh. I.*	7 15

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

MARCH.

	d	h	m	s		d	h	m	s		d	h	m	s
II Tr. E. *	13	7	17		II Ec. R.	18	17	51	6.4	I Tr. I.	25	16	59	
I Tr. I. *		7	34		I Sh. E.		18	34		III Ec. D.		17	31	19.0
I Sh. I. *		8	52		I Oc. D. †	19	12	15		I Sh. I.		18	14	
I Tr. E. *		9	49		I Ec. R.		15	45	29.5	I Tr. E.		19	14	
II Sh. E. *		9	51		II Tr. I. *	20	7	22		III Ec. R.		20	10	16.2
I Sh. E. *		11	8		I Tr. I. *		9	31		II Ec. R.		20	26	35.2
I Oc. D.	14	4	47		II Sh. I. *		9	53		I Sh. E.		20	29	
I Ec. R. *		8	18	40.1	II Tr. E. *		9	59		I Oc. D.	26	14	14	
III Tr. I.		18	8		I Sh. I. *		10	47		I Ec. R.		17	41	18.1
III Tr. E.		20	53		I Tr. E. *		11	46		II Tr. I. *	27	10	6	
III Sh. I.		23	22		II Sh. E. †		12	30		I Tr. I. *		11	29	
II Oc. D.		23	26		I Sh. E. †		13	3		II Sh. I. †		12	32	
II Oc. R.	15	2	3		I Oc. D. †	21	6	45		II Tr. E. †		12	42	
I Tr. I.		2	3		I Ec. R. *		10	14	30.4	I Sh. I. †		12	42	
II Ec. D.		2	3	20.0	III Tr. I.		22	15		I Tr. E.		13	44	
III Sh. E.		2	10		III Tr. E.	22	1	2		I Sh. E.		14	58	
I Sh. I.		3	21		II Oc. D.		2	5		II Sh. E.		15	9	
I Tr. E.		4	18		III Sh. I.		3	22		I Oc. D. *	28	8	43	
II Ec. R.		4	33	20.6	I Tr. I.		4	0		I Ec. R. †		12	10	18.4
I Sh. E.		5	36		I Sh. I.		5	16		III Tr. I.	29	2	27	
I Oc. D.		23	17		III Sh. E.		6	11		II Oc. D.		4	46	
I Ec. R.	16	2	47	35.4	I Tr. E. †		6	15		III Tr. E.		5	14	
II Tr. I.		18	0		II Ec. R. *		7	8	51.0	I Tr. I.		5	58	
I Tr. I.		20	32		I Sh. E. *		7	32		I Sh. I. †		7	11	
II Sh. I.		20	33		I Oc. D.	23	1	14		III Sh. I. *		7	22	
II Tr. E.		20	37		I Ec. R.		4	43	25.2	I Tr. E. *		8	13	
I Sh. I.		21	50		II Tr. I.		20	43		I Sh. E. *		9	27	
I Tr. E.		22	47		I Tr. I.		22	30		II Ec. R. *		9	44	18.7
II Sh. E.		23	10		II Sh. I.		23	12		III Sh. E. *		10	12	
I Sh. E.	17	0	5		II Tr. E.		23	20		I Oc. D.	30	3	13	
I Oc. D.		17	46		I Sh. I.		23	45		I Ec. R. †		6	39	12.8
I Ec. R.		21	16	36.3	I Tr. E.	24	0	45		II Tr. I.		23	27	
III Oc. D. *	18	8	14		II Sh. E.		1	49		I Tr. I.	31	0	28	
III Oc. R. *		11	0		I Sh. E.		2	0		I Sh. I.		1	40	
II Oc. D. †		12	46		I Oc. D.		19	44		II Sh. I.		1	50	
III Ec. D.		13	30	25.3	I Ec. R.		23	12	25.6	II Tr. E.		2	4	
I Tr. I.		15	2		III Oc. D. †	25	12	24		I Tr. E.		2	43	
III Ec. R.		16	8	19.1	III Oc. R.		15	11		I Sh. E.		3	55	
I Sh. I.		16	19		II Oc. D.		15	26		II Sh. E.		4	27	
I Tr. E.		17	17							I Oc. D.		21	43	

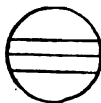
The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

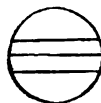
MARCH.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.

r
*

III.

d r
* *

II.

d r
* *

IV.

No Eclipse
of this Satellite.

APRIL.

	d	h	m	s		d	h	m	s		d	h	m	s	
I. Ec. R.	1	1	8	12.8	II. Ec. R.	5	12	19	44.1	II. Sh. I.	10	17	48		
III. Oc. D.			16	38	III. Sh. E.			14	13	II. Tr. E.			18	14	
II. Oc. D.			18	7	I. Oc. D.	6	5	12		I. Sh. E.			18	48	
I. Tr. I.			18	57	I. Ec. R.*			8	34	57.7	II. Sh. E.			20	25
III. Oc. R.			19	26	II. Tr. I.	7	2	13		I. Oc. D.	11	12	42		
I. Sh. I.			20	9	I. Tr. I.			2	26	I. Ec. R.			16	146.4	
I. Tr. E.			21	12	II. Sh. I.			3	35	I. Tr. I.*	12	9	56		
III. Ec. D.			21	32	II. Sh. I.			4	28	II. Oc. D.*			10	11	
I. Sh. E.			22	24	I. Tr. E.			4	41	III. Tr. I.†			10	58	
II. Ec. R.			23	2	II. Tr. E.			4	50	I. Sh. I.†			11	1	
III. Ec. R.	2	0	12	26.1	I. Sh. E.			5	51	I. Tr. E.			12	11	
I. Oc. D.			16	13	II. Sh. E.†			7	6	I. Sh. E.			13	17	
I. Ec. R.			19	37	I. Oc. D.			23	42	III. Tr. E.			13	48	
II. Tr. I.	3	12	50		I. Ec. R.	8	3	3	56.9	II. Ec. R.			14	55	
I. Tr. I.			13	27	II. Oc. D.			20	50	III. Sh. I.			15	23	
I. Sh. I.			14	37	III. Oc. D.			20	54	III. Sh. E.			18	14	
II. Sh. I.			15	10	I. Tr. I.			20	56	I. Oc. D.†	13	7	12		
II. Tr. E.			15	27	I. Sh. I.			22	4	I. Ec. R.*			10	30	
I. Tr. E.			15	42	I. Tr. E.			23	11				39	0	
I. Sh. E.			16	53	III. Oc. R.			23	43	I. Tr. I.	14	4	25		
II. Sh. E.			17	47	I. Sh. E.	9	0	19		II. Tr. I.			4	59	
I. Oc. D.*	4	10	42		III. Ec. D.			1	32	I. Sh. I.			5	30	
I. Ec. R.			14	6	II. Ec. R.			1	37	I. Tr. E.			6	41	
III. Tr. I.†	5	6	41		III. Ec. R.			4	13	II. Sh. I.†			7	6	
II. Oc. D.*			7	28	I. Oc. D.			18	12	II. Tr. E.†			7	37	
I. Tr. I.*			7	56	I. Ec. R.			21	32	I. Sh. E.*			7	46	
I. Sh. I.*			9	6				21	32	II. Sh. E.*			9	44	
III. Tr. E.*			9	29	I. Tr. I.	10	15	26		I. Oc. D.	15	1	42		
I. Tr. E.*			10	12	II. Tr. I.			15	36	I. Ec. R.			4	59	
I. Sh. E.†			11	22	I. Sh. I.			16	32	I. Tr. I.			22	55	
III. Sh. I.†			11	22	I. Tr. E.			17	41	II. Oc. D.			23	34	

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

APRIL.

d h m s				d h m s				d h m s			
I. Sh. I.	15	23	59	I. Tr. I.	21	6	25	I. Tr. I.	26	13	55
I. Tr. E.	16	1	11	I. Sh. I.	†	7	25	I. Sh. I.		14	51
III. Oc. D.		1	13	II. Tr. I.	†	7	47	II. Oc. D.		15	41
I. Sh. E.		2	14	I. Tr. E. *		8	41	I. Tr. E.		16	11
III. Oc. R.		4	3	I. Sh. E. *		9	41	I. Sh. E.		17	7
II. Ec. R.		4	12 48.5	II. Sh. I. *		9	44	III. Tr. I.		19	40
III. Ec. D.		5	33 13.1	II. Tr. E. †		10	25	II. Ec. R.		20	5 51.6
III. Ec. R. *		8	15 19.8	II. Sh. E.		12	22	III. Tr. E.		22	32
I. Oc. D.		20	12	I. Oc. D.	22	3	42	III. Sh. I.		23	24
I. Ec. R.		23	28 27.5	I. Ec. R.		6	55 13.7	III. Sh. E.	27	2	18
I. Tr. I.	17	17	25	I. Tr. I.	23	0	55	I. Oc. D.		11	13
II. Tr. I.		18	24	I. Sh. I.		1	53	I. Ec. R.		14	21 49.3
I. Sh. I.		18	27	II. Oc. D.		2	18	I. Tr. I.	*28	8	25
I. Tr. E.		19	41	I. Tr. E.		3	11	I. Sh. I. *		9	20
II. Sh. I.		20	26	I. Sh. E.		4	9	II. Tr. I.	†	10	35
I. Sh. E.		20	43	III. Oc. D.		5	34	I. Tr. E. †		10	41
II. Tr. E.		21	1	II. Ec. R.		6	48 9.9	I. Sh. E.		11	36
II. Sh. E.		23	4	III. Oc. R. *		8	25	II. Sh. I.		12	22
I. Oc. D.	18	14	42	III. Ec. D. *		9	33 34.7	II. Tr. E.		13	13
I. Ec. R.		17	57 24.7	III. Ec. R.		12	16 44.0	II. Sh. E.		15	1
I. Tr. I.	19	11	55	I. Oc. D.		22	13	I. Oc. D.	29	5	43
II. Oc. D.		12	56	I. Ec. R.	24	1	24 2.9	I. Ec. R. *		8	50 45.4
I. Sh. I.		12	56	I. Tr. I.		19	25	I. Tr. I.	30	2	55
I. Tr. E.		14	11	I. Sh. I.		20	22	I. Sh. I.		3	48
I. Sh. E.		15	12	II. Tr. I.		21	11	II. Oc. D.		5	4
III. Tr. I.		15	18	I. Tr. E.		21	41	I. Tr. E.		5	11
II. Ec. R.		17	30 30.4	I. Sh. E.		22	38	I. Sh. E.		6	4
III. Tr. E.		18	9	II. Sh. I.		23	4	II. Ec. R. *		9	23 31.4
III. Sh. I.		19	23	II. Tr. E.		23	49	III. Oc. D. *		9	56
III. Sh. E.		22	16	II. Sh. E.	25	1	42	III. Oc. R.		12	49
I. Oc. D. * 20		9	12	I. Oc. D.		16	43	III. Ec. D.		13	33 57.8
I. Ec. R.		12	26 16.4	I. Ec. R.		19	52 58.9	III. Ec. R.		16	18 9.2

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.



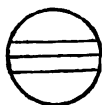
r *

III.



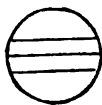
d r *

II.



r *

IV.

No Eclipse
of this Satellite.

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

MAY.

d h m s		d h m s		d h m s	
I. Oc. D.	1 0 14	I. Tr. I.	8 23 26	I. Sh. E.	16 4 23
I. Ec. R.	3 19 33.3	I. Sh. I.	9 0 12	II. Tr. I.	5 39
I. Tr. I.	21 26	I. Tr. E.	1 42	II. Sh. I.	6 57
I. Sh. I.	22 17	I. Sh. E.	2 28	II. Tr. E.†	8 18
I. Tr. E.	23 41	II. Tr. I.	2 50	II. Sh. E.†	9 36
II. Tr. I.	2 0 0	II. Sh. I.	4 19	I. Oc. D.	22 47
I. Sh. E.	0 33	II. Tr. E.	5 28	I. Ec. R.	17 1 39 9.6
II. Sh. I.	1 42	II. Sh. E.	6 58	I. Tr. I.	19 58
II. Tr. E.	2 38	I. Oc. D.	20 45	I. Sh. I.	20 35
II. Sh. E.	4 20	I. Ec. R.	23 43 51.7	I. Tr. E.	22 14
I. Oc. D.	18 44	I. Tr. I.	10 17 57	I. Sh. E.	22 52
I. Ec. R.	21 48 28.0	I. Sh. I.	18 40	II. Oc. D.	18 0 2
I. Tr. I.	3 15 56	I. Tr. E.	20 12	II. Ec. R.	3 51 58.2
I. Sh. I.	16 46	I. Sh. E.	20 57	III. Tr. I. *	8 53
I. Tr. E.	18 11	II. Oc. D.	21 14	III. Sh. I.	11 22
II. Oc. D.	18 27	II. Ec. R.	11 1 16 35.2	III. Tr. E.	11 48
I. Sh. E.	19 2	III. Tr. I.	4 27	III. Sh. E.	14 19
II. Ec. R.	22 41 13.2	III. Tr. E.	7 21	I. Oc. D.	17 17
III. Tr. I.	4 0 3	III. Sh. I.	7 23	I. Ec. R.	20 7 55.8
III. Tr. E.	2 56	III. Sh. E.†	10 19	I. Tr. I.	19 14 28
III. Sh. I.	3 23	I. Oc. D.	15 16	I. Sh. I.	15 4
III. Sh. E.	6 18	I. Ec. R.	18 12 39.5	I. Tr. E.	16 44
I. Oc. D.	13 14	I. Tr. I.	12 12 27	I. Sh. E.	17 20
I. Ec. R.	16 17 17.2	I. Sh. I.	13 9	II. Tr. I.	19 4
I. Tr. I.†	5 10 26	I. Tr. E.	14 43	II. Sh. I.	20 15
I. Sh. I.	11 14	I. Sh. E.	15 25	II. Tr. E.	21 43
I. Tr. E.	12 42	II. Tr. I.	16 14	II. Sh. E.	22 54
II. Tr. I.	13 24	II. Sh. I.	17 38	I. Oc. D.	20 11 48
I. Sh. E.	13 31	II. Tr. E.	18 52	I. Ec. R.	14 36 47.6
II. Sh. I.	15 0	II. Sh. E.	20 16	I. Tr. I.†	21 8 58
II. Tr. E.	16 3	I. Oc. D.†	13 9 46	I. Sh. I.†	9 32
II. Sh. E.	17 39	I. Ec. R.	12 41 32.8	I. Tr. E.	11 14
I. Oc. D.†	6 7 44	I. Tr. I.	14 6 57	I. Sh. E.	11 49
I. Ec. R.	10 46 12.0	I. Sh. I.	7 38	II. Oc. D.	13 26
I. Tr. I.	7 4 56	I. Tr. E. *	9 13	II. Ec. R.	17 9 40.4
I. Sh. I.	5 43	I. Sh. E.†	9 54	III. Oc. D.	23 14
I. Tr. E.	7 12	II. Oc. D.	10 38	III. Ec. R.	22 4 22 57.9
II. Oc. D.†	7 51	II. Ec. R.	14 34 16.1	I. Oc. D.	6 18
I. Sh. E.†	7 59	III. Oc. D.	18 47	I. Ec. R.†	9 53 1.4
II. Ec. R.	11 58 53.3	III. Ec. R.	15 0 21 28.6	I. Tr. I.	23 3 29
III. Oc. D.	14 21	I. Oc. D.	4 16	I. Sh. I.	4 1
III. Oc. R.	17 15	I. Ec. R.	7 10 18.0	I. Tr. E.	5 45
III. Ec. D.	17 34 53.3	I. Tr. I.	16 1 27	I. Sh. E.	6 18
III. Ec. R.	20 20 6.3	I. Sh. I.	2 7	II. Tr. I.†	8 30
I. Oc. D.	8 2 15	I. Tr. E.	3 43	II. Sh. I.†	9 34
I. Ec. R.	5 14 58.5			II. Tr. E.	11 8

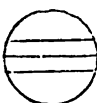



The abbreviations denote as follows:—E. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

MAY.

d h m s				d h m s				d h m s			
II. Sh. E.	23	12	13	I. Tr. I.	26	16	29	II. Ec. R.	28	19	45 6.9
I. Oc. D.	24	0	48	I. Sh. I.	16	58		III. Oc. D.	29	3	42
I. Ec. R.	3	34	21.1	I. Tr. E.	18	45		I. Oc. D. †	8	20	
I. Tr. I.	21	59		I. Sh. E.	19	15		III. Ec. R. †	8	23	47.7
I. Sh. I.	22	30		II. Tr. I.	21	54		I. Ec. R.	11	0	38.3
				II. Sh. I.	22	52					
I. Tr. E.	25	0	15	II. Tr. E.	27	0	33	I. Tr. I.	30	5	30
I. Sh. E.	0	46		II. Sh. E.	1	32		I. Sh. I.	5	56	
II. Oc. D.	2	50		I. Oc. D.	13	49		I. Tr. E.	7	46	
II. Ec. R.	6	27	22.7	I. Ec. R.	16	31	56.0	I. Sh. E. †	8	12	
III. Tr. I.	13	19						II. Tr. I.	11	20	
III. Sh. I.	15	22		I. Tr. I.	28	11	0	II. Sh. I.	12	11	
III. Tr. E.	16	16		I. Sh. I.	11	27		II. Tr. E.	13	59	
III. Sh. E.	18	20		I. Tr. E.	13	16		II. Sh. E.	14	51	
I. Oc. D.	19	19		I. Sh. E.	13	44					
I. Ec. R.	22	3	5.8	II. Oc. D.	16	14		I. Oc. D.	31	2	50
								I. Ec. R.	5	29	26.3

Phases of the Eclipses of the Satellites for an inverting Telescope.

I. 	r *
II. 	r *
III. 	r *
IV. 	No Eclipse of this Satellite.

THE SATELLITES OF JUPITER

ARE INVISIBLE FROM THE 31ST DAY OF MAY UNTIL THE 21ST DAY OF JULY,
JUPITER BEING TOO NEAR TO THE SUN.

JULY.

d h m s				d h m s				d h m s			
II. Ec. D.	21	0	36 29.4	III. Tr. E.	22	4	13	II. Sh. E.	22	22	23
II. Oc. R.	4	8		I. Sh. I.	8	14		II. Tr. E.	23	19	
I. Ec. D.	11	7	52.7	I. Tr. I.	8	41		I. Ec. D.	23	5	36 27.7
I. Oc. R.	13	49		I. Sh. E.	10	31		I. Oc. R.	8	19	
III. Sh. I.	23	18		I. Tr. E.	10	58		I. Sh. I.	24	2	42
III. Tr. I.	22	1	5	II. Sh. I.	19	42		I. Tr. I.	3	11	
III. Sh. E.	2	23		II. Tr. I.	20	37					

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

JULY.

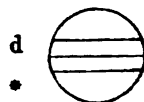
d h m s				d h m s				d h m s			
I. Sh. E.	24	4	59	IV. Tr. E.	26	11	4	III. Tr. E.	29	8	41
I. Tr. E.		5	28	II. Sh. E.		11	41	I. Sh. I.		10	8
II. Ec. D.	13	54	29.8	II. Tr. E.		12	44	I. Tr. I.		10	41
II. Oc. R.	17	32		I. Ec. D.	18	33	28.5	I. Sh. E.		12	25
I. Ec. D.	25	0	4 56.5	I. Oc. R.		21	20	I. Tr. E.		12	59
I. Oc. R.		2	50	I. Sh. I. †	27	15	39	II. Sh. I.		22	17
III. Ec. D.	13	31	20.0	I. Tr. I. †		16	11	II. Tr. I.		23	26
III. Oc. R.	18	36		I. Sh. E.		17	56	II. Sh. E.	30	0	59
I. Sh. I.	21	11		I. Tr. E.		18	29	II. Tr. E.		2	8
I. Tr. I.	21	41		II. Ec. D.	28	3	12 2.3	I. Ec. D.		7	30 30.0
I. Sh. E.	23	28		II. Oc. R.		6	57	I. Oc. R.		10	20
I. Tr. E.	23	58		I. Ec. D.	13	1	57.1	I. Sh. I.	31	4	36
IV. Sh. I.	26	4	10	I. Oc. R. †		15	50	I. Tr. I.		5	11
IV. Sh. E.		6	0	III. Sh. I.	29	3	17	I. Sh. E.		6	53
IV. Tr. I.		8	55	III. Tr. I.		5	31	I. Tr. E.		7	29
II. Sh. I.		9	0	III. Sh. E.		6	23	II. Ec. D.		16	30 7.3
II. Tr. I.		10	2					II. Oc. R.		20	22

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.



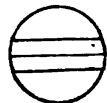
III.



II.



IV.

No Eclipse
of this Satellite.

AUGUST.

d h m s				d h m s				d h m s			
I. Ec. D.	1	1	58 57.5	I. Ec. D.	2	20	27 27.7	I. Ec. D. †	4	14	55 54.7
I. Oc. R.		4	50	I. Oc. R.		23	20	I. Oc. R.		17	50
III. Ec. D.	17	30	9.9	IV. Ec. D.	3	13	48 11.6	III. Sh. I.	5	7	16
III. Oc. R.	23	3		IV. Ec. R. †		15	33 43.9	III. Tr. I.		9	57
I. Sh. I.	23	5		I. Sh. I.		17	33	III. Sh. E.		10	24
I. Tr. I.	23	42		I. Tr. I.		18	12	I. Sh. I.		12	2
I. Sh. E.	2	1	22	IV. Oc. D.		19	42	I. Tr. I.		12	42
I. Tr. E.		1	59	I. Sh. E.		19	51	III. Tr. E.		13	8
II. Sh. I.	11	35		I. Tr. E.		20	29	I. Sh. E. †		14	19
II. Tr. I.	12	50		IV. Oc. R.		22	3	I. Tr. E. *		14	59
II. Sh. E. †		14	16	II. Ec. D.	4	5	47 40.0	II. Sh. I.	6	0	52
II. Tr. E. †		15	33	II. Oc. R.		9	47	II. Tr. I.		2	13

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

AUGUST.

d h m s				d h m s				d h m s			
II. Sh. E.	6	3	34	II. Tr. E.	13	7	44	I. Ec. D. †	20	13	11 57.8
II. Tr. E.	4	5	7	I. Ec. D.	11	18	15.2	IV. Oc. D. *	15	5	4
I. Ec. D.	9	24	26.0	I. Oc. R. †	14	21		I. Oc. R. †	16	20	
I. Oc. R.	12	21		I. Sh. I.	14	8	24	IV. Oc. R.	18	36	
I. Sh. I.	7	6	30	I. Tr. I.	9	12		I. Sh. I.	21	10	18
I. Tr. I.	7	12		I. Sh. E.	10	42		I. Tr. I.	11	12	
I. Sh. E.	8	48		I. Tr. E.	11	30		I. Sh. E.	12	36	
I. Tr. E.	9	30		II. Ec. D.	21	41	36.1	I. Tr. E. †	13	30	
II. Ec. D.	19	5	49.3	II. Oc. R.	15	2	0	II. Ec. D.	22	0	17 27.2
II. Oc. R.	23	11		I. Ec. D.	5	46	39.7	II. Oc. R.	4	48	
I. Ec. D.	8	3	52 52.0	I. Oc. R.	8	50		I. Ec. D.	7	40	20.9
I. Oc. R.	6	51		III. Ec. D.	16	1	28 18.1	I. Oc. R.	10	50	
III. Ec. D.	21	28	58.1	I. Sh. I.	2	53		I. Sh. I.	23	4	47
I. Sh. I.	9	0	59	I. Tr. I.	3	42		III. Ec. D.	5	27	0.8
I. Tr. I.	1	42		III. Ec. R.	4	27	18.1	I. Tr. I.	5	41	
I. Sh. E.	3	16		III. Oc. D.	4	41		I. Sh. E.	7	4	
III. Oc. R.	3	29		I. Sh. E.	5	10		I. Tr. E.	7	59	
I. Tr. E.	4	0		I. Tr. E.	6	0		III. Ec. R.	8	26	56.2
II. Sh. I. †	14	10		III. Oc. R.	7	54		III. Oc. D.	9	3	
II. Tr. I. *	15	38		II. Sh. I. †	16	44		III. Oc. R.	12	17	
II. Sh. E.	16	52		II. Tr. I.	18	24		II. Sh. I.	19	18	
II. Tr. E.	18	21		II. Sh. E.	19	26		II. Tr. I.	21	10	
I. Ec. D.	22	21	20.2	II. Tr. E.	21	8		II. Sh. E.	22	1	
I. Oc. R.	10	1	21	I. Ec. D.	17	0	15 6.1	II. Tr. E.	23	54	
I. Sh. I.	19	27		I. Oc. R.	3	20		I. Ec. D.	24	2	8 45.8
I. Tr. I.	20	12		I. Sh. I.	21	21		I. Oc. R.	5	20	
I. Sh. E.	21	45		I. Tr. I.	22	12		I. Sh. I.	23	15	
I. Tr. E.	22	30		I. Sh. E.	23	39		I. Tr. I.	25	0	11
II. Ec. D.	11	8	23 22.3	I. Tr. E.	18	0	30	I. Sh. E.	1	33	
II. Oc. R.	12	36		II. Ec. D.	10	59	9.3	I. Tr. E.	2	29	
I. Ec. D.	16	49	45.6	II. Oc. R. *	15	24		II. Ec. D. †	13	35	1.0
I. Oc. R.	19	51		I. Ec. D.	18	43	29.9	II. Oc. R.	18	12	
IV. Sh. I.	22	6		I. Oc. R.	21	50		I. Ec. D.	20	37	8.4
IV. Sh. E.	12	0	12	III. Sh. I. * 19	15	13		I. Oc. R.	23	49	
IV. Tr. I.	5	13		I. Sh. I. *	15	50		I. Sh. I.	26	17	44
IV. Tr. E.	7	44		I. Tr. I. †	16	42		I. Tr. I.	18	41	
III. Sh. I.	11	15		I. Sh. E.	18	7		III. Sh. I.	19	12	
I. Sh. I. †	13	56		III. Sh. E.	18	22		I. Sh. E.	20	1	
III. Tr. I. †	14	20		III. Tr. I.	18	42		I. Tr. E.	20	59	
III. Sh. E. †	14	23		I. Tr. E.	19	0		III. Sh. E.	22	22	
I. Tr. I. *	14	42		III. Tr. E.	21	56		III. Tr. I.	23	3	
I. Sh. E. †	16	13		II. Sh. I.	20	6	1	III. Tr. E.	27	2	18
I. Tr. E.	17	0		IV. Ec. D.	7	45	38.2	II. Sh. I.	8	35	
III. Tr. E.	17	32		II. Tr. I.	7	47		II. Tr. I.	10	32	
II. Sh. I.	13	3	27	II. Sh. E.	8	44		II. Sh. E.	11	18	
II. Tr. I.	5	1		IV. Ec. R.	9	48	19.1	II. Tr. E. †	13	17	
II. Sh. E.	6	9		II. Tr. E.	10	31		I. Ec. D. *	15	5	34.6

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite. Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

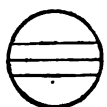
AUGUST.

d h m s				d h m s				d h m s			
I. Oc. R.	27	18	19	IV. Tr. E.	29	4	3	III. Ec. R.	30	12	26 38.7
I. Sh. I.	28	12	12	II. Oc. R.	7	35		III. Oc. D. †	13	22	
I. Tr. I. †	13	11		I. Ec. D.	9	33	56.6	III. Oc. R. †	16	38	
I. Sh. E. *	14	30		I. Oc. R. †	12	49		II. Sh. I.	21	53	
I. Tr. E. *	15	29		I. Sh. I.	30	6	41	II. Tr. I.	23	55	
IV. Sh. I. *	16	2		I. Tr. I.	7	40		II. Sh. E.	31	0	36
IV. Sh. E.	18	23		I. Sh. E.	8	58		II. Tr. E.	2	39	
IV. Tr. I.	29	1	12	III. Ec. D. †	9	25	47.9	I. Ec. D.	4	2	19.9
II. Ec. D.	2	53	23.1	I. Tr. E.	9	58		I. Oc. R.	7	18	

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.

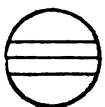
d



III.

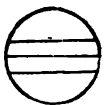
d

r



II.

d



IV.

d

r



SEPTEMBER.

d h m s				d h m s				d h m s			
I. Sh. I.	1	1	9	I. Oc. R.	3	20	18	III. Oc. R.	6	20	57
I. Tr. I.	2	10		I. Sh. I. *	4	14	6	II. Sh. I.	7	0	27
I. Sh. E.	3	27		I. Tr. I. *	15	9		II. Tr. I.	2	38	
I. Tr. E.	4	28		I. Sh. E. *	16	24		II. Sh. E.	3	10	
II. Ec. D. *	16	10	56.6	I. Tr. E.	17	27		II. Tr. E.	5	23	
II. Oc. R.	20	58		II. Ec. D.	5	5	29 22.6	I. Ec. D.	5	55	48.6
I. Ec. D.	22	30	41.2	II. Oc. R.	10	21		I. Oc. R.	9	17	
I. Oc. R.	2	1	48	I. Ec. D.	11	27	26.7	I. Sh. I.	8	3	3
I. Sh. I.	19	38		I. Oc. R. *	14	47		I. Tr. I.	4	9	
I. Tr. I.	20	40		IV. Ec. D.	6	1	43 36.0	I. Sh. E.	5	21	
I. Sh. E.	21	55		IV. Ec. R.	4	1	13.2	I. Tr. E.	6	27	
I. Tr. E.	22	58		I. Sh. I.	8	35		II. Ec. D.	18	46	56.7
III. Sh. I.	23	11		I. Tr. I.	9	39		II. Oc. R.	23	44	
III. Sh. E.	3	2	21	I. Sh. E.	10	52		I. Ec. D.	9	0	24 8.4
III. Tr. I.	3	22		IV. Oc. D.	11	45		I. Oc. R.	3	46	
III. Tr. E.	6	38		I. Tr. E.	11	57		I. Sh. I.	21	32	
II. Sh. I.	11	10		III. Ec. D. *	13	23	58.8	I. Tr. I.	22	38	
II. Tr. I. †	13	17		IV. Oc. R. *	14	45		I. Sh. E.	23	49	
II. Sh. E. *	13	53		III. Ec. R. *	16	25	44.7	I. Tr. E.	10	0	56
II. Tr. E. *	16	2		III. Oc. D.	17	40		III. Sh. I.	3	10	
I. Ec. D. †	16	59	5.8								

The abbreviations denote as follows :—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

SEPTEMBER.

d h m s				d h m s				d h m s			
III. Sh. E.	10	6	22	I. Sh. E.	17	1	43	IV. Oc. R.	23	10	20
III. Tr. I.		7	39	I. Tr. E.		2	54	I. Sh. I.	24	1	19
III. Tr. E.		10	56	III. Sh. I.		7	9	I. Tr. I.		2	33
II. Sh. I. *		13	44	III. Sh. E.		10	21	I. Sh. E.		3	37
II. Tr. I. *		15	59	III. Tr. I. †		11	53	I. Tr. E.		4	51
II. Sh. E. *		16	27	III. Tr. E. *		15	11	III. Sh. I.		11	7
II. Tr. E.		18	45	II. Sh. I. *		16	17	III. Sh. E. *		14	21
I. Ec. D.		18	52 31.8	II. Tr. I.		18	41	III. Tr. I. *		16	4
I. Oc. R.		22	16	II. Sh. E.		19	1	II. Sh. I.		18	51
I. Sh. I. *	11	16	0	I. Ec. D.		20	45 53.0	III. Tr. E.		19	44
I. Tr. I. †		17	8	II. Tr. E.		21	27	II. Tr. I.		21	21
I. Sh. E.		18	18	I. Oc. R.	18	0	13	II. Sh. E.		21	35
I. Tr. E.		19	26	I. Sh. I.		17	54	I. Ec. D.		22	39 10.3
II. Ec. D.	12	8	5 26.3	I. Tr. I.		19	5	II. Tr. E.	25	0	7
II. Oc. R. *		13	7	I. Sh. E.		20	11	I. Oc. R.		2	9
I. Ec. D. *		13	20 51.6	I. Tr. E.		21	23	I. Sh. I.		19	48
I. Oc. R. †		16	45	II. Ec. D.	19	10	41 33.5	I. Tr. I.		21	2
I. Sh. I.	13	10	28	I. Ec. D. *		15	14 12.0	I. Sh. E.		22	5
I. Tr. I.		11	37	II. Oc. R. *		15	50	I. Tr. E.		23	20
I. Sh. E. †		12	46	I. Oc. R.		18	42	II. Ec. D.	26	13	17 44.3
I. Tr. E. *		13	55	I. Sh. I. †	20	12	22	I. Ec. D. *		17	7 28.5
III. Ec. D. †		17	21 59.9	I. Tr. I. *		13	34	II. Oc. R.		18	33
III. Ec. R.		20	24 39.6	I. Sh. E. *		14	40	I. Oc. R.		20	38
III. Oc. D.		21	54	I. Tr. E. *		15	53	I. Sh. I. *	27	14	16
III. Oc. R.	14	1	13	III. Ec. D.		21	20 10.4	I. Tr. I. *		15	31
II. Sh. I.		3	1	III. Ec. R.	21	0	23 43.3	I. Sh. E. *		16	34
II. Tr. I.		5	20	III. Oc. D.		2	6	I. Tr. E. †		17	49
II. Sh. E.		5	44	III. Oc. R.		5	26	III. Ec. D.	28	1	18 21.3
I. Ec. D.		7	49 12.1	II. Sh. I.		5	34	III. Ec. R.		4	22 47.3
II. Tr. E.		8	6	II. Tr. I.		8	1	III. Oc. D.		6	16
IV. Sh. I.		9	58	II. Sh. E.		8	18	II. Sh. I.		8	8
I. Oc. R.		11	14	I. Ec. D.		9	42 31.5	III. Oc. R.		9	36
IV. Sh. E. †		12	32	II. Tr. E.		10	47	II. Tr. I.		10	40
IV. Tr. I.		20	46	I. Oc. R. *		13	11	II. Sh. E.		10	52
IV. Tr. E.		23	53	I. Sh. I.	22	6	51	I. Ec. D. †		11	35 46.9
I. Sh. I.	15	4	57	I. Tr. I.		8	4	II. Tr. E. *		13	27
I. Tr. I.		6	6	I. Sh. E.		9	9	I. Oc. R. *		15	7
I. Sh. E.		7	14	I. Tr. E.		10	22	I. Sh. I.	29	8	45
I. Tr. E.		8	25	IV. Ec. D.		19	42 23.1	I. Tr. I.		10	0
II. Ec. D.		21	23 0.6	IV. Ec. R.		22	13 16.2	I. Sh. E. †		11	3
I. Ec. D.	16	2	17 31.0	II. Ec. D.		23	59 8.4	I. Tr. E. *		12	19
II. Oc. R.		2	29	I. Ec. D.	23	4	10 49.4	II. Ec. D.	30	2	35 19.8
I. Oc. R.		5	43	II. Oc. R.		5	12	I. Ec. D.		6	4 4.2
I. Sh. I.		23	25	IV. Oc. D.		7	6	II. Oc. R.		7	54
I. Tr. I.	17	0	36	I. Oc. R.		7	40	I. Oc. R.		9	36

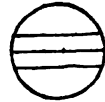
The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.

MEAN TIME.

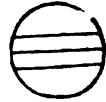
SEPTEMBER.

Phases of the Eclipses of the Satellites for an inverting Telescope.

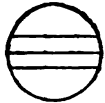
I.

d
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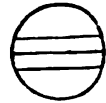
III.

d
•r
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II.

d
•

IV.

d
•r
•

OCTOBER.

I. Sh. I.	d h m s	III. Ec. R.	d h m s	IV. Ec. D. *	d h m s
IV. Sh. I.	3 13	III. Oc. D.	5 8 22 25.4	IV. Ec. R. *	9 13 40 54.0
I. Tr. I.	3 56	II. Sh. I. †	10 22	I. Sh. I.	16 23 42.5
I. Sh. E.	4 29	II. Tr. I. *	10 41	I. Tr. I.	23 35
IV. Sh. E.	5 31	II. Sh. E. *	13 18	IV. Oc. D.	10 0 53
I. Tr. E.	6 41	I. Ec. D. *	13 26	I. Sh. E.	1 47
III. Sh. I. *	6 47	III. Oc. R. *	13 28 59.3	I. Tr. E.	1 53
IV. Tr. I. *	15 5	II. Tr. E. *	13 43	IV. Oc. R.	3 12
III. Sh. E.	15 44	I. Oc. R. *	16 4	II. Ec. D.	5 13
IV. Sh. E.	18 20	I. Sh. I. †	17 2	I. Ec. D.	18 30 15.1
IV. Tr. E.	19 4	I. Tr. I. *	6 10 38	II. Oc. R.	20 53 52.5
III. Tr. I.	20 11	I. Sh. E. *	11 55	I. Sh. I.	23 53
II. Sh. I.	21 25	I. Tr. E. *	12 56	I. Oc. R.	11 0 28
III. Tr. E.	23 32	II. Ec. D.	14 14	I. Sh. I. †	18 4
II. Tr. I.	23 59	I. Ec. D.	7 5 11 34.3	I. Tr. I.	19 21
II. Sh. E.	2 0 9	I. Ec. D.	7 57 16.1	I. Sh. E.	20 22
I. Ec. D.	0 32 24.0	II. Oc. R. †	10 34	I. Tr. E.	21 40
II. Tr. E.	2 46	I. Oc. R. †	11 31	III. Ec. D.	12 9 15 18.1
I. Oc. R.	4 5	I. Sh. I.	8 5 7	III. Ec. R. *	12 21 27.8
I. Sh. I.	21 42	I. Tr. I.	6 24	II. Sh. I. *	13 15
I. Tr. I.	22 58	I. Sh. E.	7 25	III. Oc. D. *	14 24
I. Sh. E.	23 59	I. Tr. E.	8 43	I. Ec. D. *	15 22 9.5
I. Tr. E.	3 1 16	III. Sh. I.	19 3	II. Tr. I. *	15 53
II. Ec. D. *	15 53 58.4	III. Sh. E.	22 19	II. Sh. E. *	15 59
I. Ec. D.	19 0 41.8	II. Sh. I.	23 58	III. Oc. R. †	17 46
II. Oc. R.	21 14	III. Tr. I.	9 0 15	II. Tr. E.	18 40
I. Oc. R.	22 33	I. Ec. D.	2 25 35.0	I. Oc. R.	18 56
I. Sh. I. *	4 16 10	II. Tr. I.	2 35	I. Sh. I. *	13 12 32
I. Tr. I. †	17 27	II. Sh. E.	2 42	I. Tr. I. *	13 50
I. Sh. E.	18 28	III. Tr. E.	3 37	I. Sh. E. *	14 50
I. Tr. E.	19 45	II. Tr. E.	5 22	I. Tr. E. *	16 9
III. Ec. D.	5 5 17 7.0	I. Oc. R.	5 59		

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

OCTOBER.

d h m s				d h m s				d h m s									
II. Ec. D.	14	7	47	51	4	II. Sh. E. †	19	18	33	IV. Ec. R. *	26	10	33	21	5		
I. Ec. D.		9	50	25	8	I. Oc. R.		20	49	III. Ec. D. *		17	11	24	1		
II. Oc. R. *		13	12			II. Tr. E.		21	14	II. Sh. I. †		18	21				
I. Oc. R. *		13	25			III. Oc. R.		21	45	I. Ec. D.		19	8	26	2		
I. Sh. I.	15	7	1			I. Sh. I. *	20	14	26	IV. Oc. D.		19	38				
I. Tr. I.		8	19			I. Tr. I. *		15	44	III. Ec. R.		20	19	14	3		
I. Sh. E.		9	19			I. Sh. E. *		16	44	II. Tr. I.		20	58				
I. Tr. E. †		10	37			I. Tr. E. †		18	3	II. Sh. E.		21	7				
III. Sh. I.		23	2			II. Ec. D. †	21	10	24	11	3	III. Oc. D.		22	15		
III. Sh. E.	16	2	18			I. Ec. D. *		11	43	34	3	I. Oc. R.		22	42		
II. Sh. I.		2	31			I. Oc. R. *		15	18	IV. Oc. R.		23	14				
III. Tr. I.		4	15			II. Oc. R. *		15	48	II. Tr. E.		23	45				
I. Ec. D.		4	18	44	2	I. Sh. I.	22	8	55	III. Oc. R.	27	1	40				
II. Tr. I.		5	10			I. Tr. I. †		10	12	I. Sh. I. *		16	20				
II. Sh. E.		5	16			I. Sh. E. *		11	13	I. Tr. I. *		17	36				
III. Tr. E.		7	38			I. Tr. E. *		12	31	I. Sh. E. †		18	38				
I. Oc. R.		7	53			III. Sh. I.	23	3	0	I. Tr. E.		19	55				
II. Tr. E.		7	57			II. Sh. I.		5	5	II. Ec. D. *	28	13	0	33	2		
I. Sh. I.	17	1	29			I. Ec. D.		6	11	52	3	I. Ec. D. *		13	36	42	5
I. Tr. I.		2	47			III. Sh. E.		6	17	I. Oc. R. *		17	9				
I. Sh. E.		3	47			II. Tr. I.		7	42	II. Oc. R. †		18	22				
I. Tr. E.		5	6			II. Sh. E.		7	50	I. Sh. I. *	29	10	48				
II. Ec. D.	21	6	34	4		III. Tr. I.		8	11	I. Tr. I. *		12	4				
IV. Sh. I.		21	52			I. Oc. R. †		9	46	I. Sh. E. *		13	6				
I. Ec. D.		22	47	1	6	II. Tr. E. †		10	30	I. Tr. E. *		14	23				
IV. Sh. E.	18	0	48			III. Tr. E. *		11	35	III. Sh. I.	30	6	59				
I. Oc. R.		2	21			I. Sh. I.	24	3	23	II. Sh. I.		7	38				
II. Oc. R.		2	30			I. Tr. I.		4	40	I. Ec. D.		8	5	0	3		
IV. Tr. I. †		9	58			I. Sh. E.		5	41	II. Tr. I. †		10	12				
IV. Tr. E. *		13	29			I. Tr. E.		6	59	III. Sh. E. *		10	17				
I. Sh. I.		19	58			II. Ec. D.		23	42	55	6	II. Sh. E. *		10	23		
I. Tr. I.		21	15			I. Ec. D.	25	0	40	9	9	I. Oc. R. *		11	37		
I. Sh. E.		22	16			I. Oc. R.		4	14	III. Tr. I. *		12	4				
I. Tr. E.		23	34			II. Oc. R.		5	5	II. Tr. E. *		13	0				
III. Ec. D. *	19	13	13	36	1	I. Sh. I.	21	51		III. Tr. E. *		15	28				
II. Sh. I. *		15	48			I. Tr. I.		23	8	I. Sh. I.	31	5	17				
III. Ec. R. *		16	20	36	3	I. Sh. E.	26	0	10	I. Tr. I.		6	32				
I. Ec. D. *		17	15	18	2	I. Tr. E.		1	27	I. Sh. E.		7	35				
III. Oc. D. †		18	22			IV. Ec. D.		7	39	34	5	I. Tr. E.		8	51		
II. Tr. I. †		18	26														

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite. Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

OCTOBER.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.

d

.



III.

d

.

r

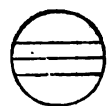
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II.

d

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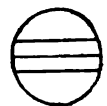
IV.

d

.

r

.



NOVEMBER.

	d	h	m	s		d	h	m	s		d	h	m	s
II. Ec. D.	1	2	19	18.6	I. Sh. I. *	5	12	42		II. Tr. I.	10	1	53	
I. Ec. D.		2	33	18.1	I. Tr. I. *		13	55		II. Sh. E.		2	14	
I. Oc. R.		6	5		I. Sh. E. *		15	0		I. Oc. R.		2	23	
II. Oc. R.		7	38		I. Tr. E. *		16	14		III. Ec. R.		4	16	37.4
I. Sh. I.		23	45		I. Ec. D. *	6	9	58	9.2	II. Tr. E.		4	41	
I. Tr. I.	2	1	0		II. Sh. I. *		10	11		III. Oc. D.		5	49	
I. Sh. E.		2	3		III. Sh. I. *		10	58		III. Oc. R. †		9	14	
I. Tr. E.		3	19		II. Tr. I. *		12	40		I. Sh. I.		20	7	
II. Sh. I.		20	55		II. Sh. E. *		12	57		I. Tr. I.		21	18	
I. Ec. D.	21	1	34.6		I. Oc. R. *		13	28		I. Sh. E.		22	26	
III. Ec. D.	21	9	7.9		III. Sh. E. *		14	16		I. Tr. E.		23	37	
II. Tr. I.	23	27			II. Tr. E. *		15	28		I. Ec. D. *	11	17	23	1.6
II. Sh. E.	23	40			III. Tr. I. *		15	51		II. Ec. D. *		18	13	22.7
III. Ec. R.	3	0	17	47.7	III. Tr. E.		19	16		I. Oc. R.		20	50	
I. Oc. R.		0	33		I. Sh. I.	7	7	10		II. Oc. R.		23	23	
III. Oc. D.		2	5		I. Tr. I.		8	23		IV. Ec. D.	12	1	38	57.7
II. Tr. E.		2	15		I. Sh. E. †		9	29		IV. Ec. R.		4	42	51.2
III. Oc. R.		5	29		I. Tr. E. *		10	42		I. Oc. D. *		12	33	
IV. Sh. I. *		15	48		I. Ec. D.	8	4	26	27.5	I. Sh. I. *		14	36	
I. Sh. I. †		18	14		II. Ec. D.		4	55	43.4	I. Tr. I. *		15	46	
IV. Sh. E. †		18	55		I. Oc. R.		7	55		IV. Oc. R. *		16	16	
I. Tr. I.		19	28		II. Oc. R. *		10	9		I. Sh. E. *		16	54	
I. Sh. E.		20	32		I. Sh. I.	9	1	39		I. Tr. E. *		18	5	
I. Tr. E.		21	47		I. Tr. I.		2	51		I. Ec. D. *	13	11	51	19.8
IV. Tr. I.	4	3	19		I. Sh. E.		3	57		II. Sh. I. *		12	45	
IV. Tr. E.		6	58		I. Tr. E.		5	10		III. Sh. I. *		14	57	
I. Ec. D. *		15	29	51.2	I. Ec. D.		22	54	44.3	II. Tr. I. *		15	6	
II. Ec. D. *		15	36	57.0	II. Sh. I.		23	28		I. Oc. R. *		15	17	
I. Oc. R. †		19	0		III. Ec. D.	10	1	7	8.5	II. Sh. E. *		15	31	
II. Oc. R.		20	54											

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite. Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

NOVEMBER.

d h m s				d h m s				d h m s			
II Tr. E. *	13	17	54	I Tr. E.	19	19	54	I Tr. I.	25	0	56
III Sh. E. *		18	16	IV. Sh. I. *	20	9	45	I Sh. E.		2	14
III Tr. I.		19	34	IV. Sh. E. *	13	2		I Tr. E.		3	15
III Tr. E.		23	0	I Ec. D. *	13	44	33.4	I Ec. D.		21	9 31.2
I Sh. I. †	14	9	4	II Sh. I. *		15	18	II Ec. D.		23	26 18.4
I Tr. I. *		10	13	I Oc. R. *		17	5	I Oc. R.		26	0 26
I Sh. E. *		11	23	II Tr. I. *		17	29	II Oc. R.		4	15
I Tr. E. *		12	32	II Sh. E. *		18	4	I Sh. I. *		18	24
I Ec. D.	15	6	19 39.0	III Sh. I. †		18	55	I Tr. I. †		19	23
II Ec. D.		7	32 9.2	IV. Tr. I.		19	41	I Sh. E.		20	42
I Oc. R. *		9	44	II Tr. E.		20	17	I Tr. E.		21	42
II Oc. R. *		12	37	III Sh. E.		22	14	I Ec. D. *	27	15	37 51.0
I Sh. I.	16	3	33	III Tr. I.		23	11	II Sh. I. *		17	52
I Tr. I.		4	41	IV. Tr. E.		23	26	I Oc. R. †		18	53
I Sh. E.		5	51	III Tr. E.	21	2	37	II Tr. I.		19	50
I Tr. E.		7	0	I Sh. I. *		10	58	II Sh. E.		20	38
I Ec. D.	17	0	47 56.4	I Tr. I. *		12	2	II Tr. E.		22	38
II Sh. I.		2	1	I Sh. E. *		13	17	III Sh. I.		22	53
I Oc. R.		4	12	I Tr. E. *		14	21	III Sh. E. †	28	2	14
II Tr. I.		4	18	I Ec. D. †	22	8	12 53.8	III Tr. I.		2	44
II Sh. E.		4	48	II Ec. D. *		10	8 36.5	III Tr. E.		6	10
III Ec. D.		5	5 14.4	I Oc. R. *		11	32	I Sh. I. *		12	52
II Tr. E.		7	6	II Oc. R. *		15	3	I Tr. I. *		13	49
III Ec. R. †		8	15 31.9	I Sh. I.	23	5	27	I Sh. E. *		15	11
III Oc. D. *		9	29	I Tr. I.		6	29	I Tr. E. *		16	8
III Oc. R. *		12	55	I Sh. E. †		7	45	IV. Ec. D. †		19	38 19.7
I Sh. I.		22	1	I Tr. E. *		8	48	IV. Ec. R.		22	51 37.1
I Tr. I.		23	8	I Ec. D.	24	2	41 12.1	IV. Oc. D.		29	4 28
I Sh. E.	18	0	20	II Sh. I.		4	35	IV. Oc. R. †		8	15
I Tr. E.		1	27	I Oc. R.		5	59	I Ec. D. *		10	6 12.7
I Ec. D. †		19	16 14.5	II Tr. I.		6	40	II Ec. D. *		12	45 5.4
II Ec. D.		20	49 49.7	II Sh. E.		7	21	I Oc. R. *		13	19
I Oc. R.		22	39	III Ec. D. *		9	4 1.1	II Oc. R. *		17	26
II Oc. R.	19	1	50	II Tr. E. *		9	28	I Sh. I. †	30	7	21
I Sh. I. *		16	30	III Ec. R. *		12	15 6.6	I Tr. I. *		8	16
I Tr. I. *		17	35	III Oc. D. *		13	5	I Sh. E. *		9	39
I Sh. E. †		18	48	III Oc. R. *		16	31	I Tr. E. *		10	35
				I Sh. I.		23	55				

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

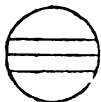
NOVEMBER.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.

d

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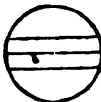
III.

d

r

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II.

d

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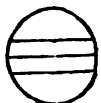
IV.

d

r

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DECEMBER.

d h m s				d h m s				d h m s			
I. Ec. D.	1	4	34 32.2	III. Sh. E.	5	6	13	I. Ec. D.	10	0	56 20.1
II. Sh. I. †		7	8	III. Tr. E. *		9	39	I. Oc. R.		3	58
I. Oc. R. †		7	46	I. Sh. I. *		14	46	II. Ec. D.		4	39 20.0
II. Tr. E. *		8	59	I. Tr. I. *		15	36	II. Oc. R. *		8	57
II. Sh. E. *		9	55	I. Sh. E. *		17	5	I. Sh. I.		22	12
II. Tr. I. *		11	48	I. Tr. E. *		17	55	I. Tr. I.		22	55
III. Ec. D. *		13	2 18.6	I. Ec. D. *	6	11	59 37.1	I. Sh. E.	11	0	30
III. Ec. R. *		16	14 11.3	I. Oc. R. *		15	5	I. Tr. E.		1	14
III. Oc. D. *		16	35	II. Ec. D. *		15	21 35.0	I. Ec. D. †		19	24 42.4
III. Oc. R.		20	2	II. Oc. R. †		19	47	I. Oc. R.		22	24
I. Sh. I.	2	1	49	IV. Sh. I.	7	3	43	II. Sh. I.		22	59
I. Tr. I.		2	43	IV. Sh. E. †		7	9	II. Tr. I.	12	0	25
I. Sh. E.		4	8	I. Sh. I. *		9	15	II. Sh. E.		1	46
I. Tr. E.		5	2	I. Tr. I. *		10	2	II. Tr. E.		3	14
I. Ec. D.	23	2	52.7	IV. Tr. I. *		11	6	III. Sh. I. †		6	50
II. Ec. D.	3	2	2 48.6	I. Sh. E. *		11	33	III. Tr. I. *		9	38
I. Oc. R.		2	12	I. Tr. E. *		12	22	III. Sh. E. *		10	12
II. Oc. R.		6	37	IV. Tr. E. *		14	53	III. Tr. E. *		13	4
I. Sh. I.		20	18	I. Ec. D.	8	6	27 57.8	I. Sh. I. *		16	40
I. Tr. I.		21	9	I. Oc. R. *		9	32	I. Tr. I. *		17	21
I. Sh. E.		22	36	II. Sh. I. *		9	42	I. Sh. E. *		18	59
I. Tr. E.		23	29	II. Tr. I. *		11	17	I. Tr. E. †		19	41
I. Ec. D. *	4	17	31 13.6	II. Sh. E. *		12	29	I. Ec. D. *	13	13	53 7.6
II. Sh. I.		20	25	II. Tr. E. *		14	6	I. Oc. R. *		16	50
I. Oc. R.		20	39	III. Ec. D. *		17	0 48.7	II. Ec. D. *		17	58 5.6
II. Tr. I.		22	9	III. Oc. R.		23	28	II. Oc. R.		22	6
II. Sh. E.		23	12	I. Sh. I.	9	3	43	I. Sh. I. *	14	11	8
II. Tr. E.	5	0	57	I. Tr. I.		4	29	I. Tr. I. *		11	48
III. Sh. I.		2	52	I. Sh. E.		6	2	I. Sh. E. *		13	27
III. Tr. I.		6	13	I. Tr. E. †		6	48	I. Tr. E. *		14	7

The abbreviations denote as follows :—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress. E. Egress.

MEAN TIME.

DECEMBER.

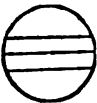

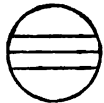

d h m s				d h m s				d h m s					
I Ec. D.*	15	8	21	30.0	I Ec. D.*	20	15	46	45.4	II Sh. E.*	26	6	55
I Oc. R.*		11	16		I Oc. R.*		18	34		II Tr. E.*		7	43
II Sh. I.*		12	16		II Ec. D.		20	34	37.1	III Sh. I.*		14	48
II Tr. I.*		13	33		II Oc. R.	21	0	23		III Tr. I.*		16	18
IV Ec. D.*		13	38	17.0	I Sh. I.*		13	31		III Sh. E.*		18	12
II Sh. E.*		15	3		I Tr. I.*		13	32		III Tr. E.†		19	45
II Tr. E.*		16	22		I Sh. E.*		15	22		I Sh. I.		20	29
IV Ec. R.*		17	0	15.5	I Tr. E.*		15	52		I Tr. I.		20	51
IV Oc. D.†		19	27		I Ec. D.*	22	10	15	9.6	I Sh. E.		22	47
III Ec. D.		20	58	56.9	I Oc. R.*		13	0		I Tr. E.		23	10
IV Oc. R.		23	15		II Sh. I.*		14	50		I Ec. D.*	27	17	40
III Oc. R.	16	2	51		II Tr. I.*		15	47		I Oc. R.		20	18
I Sh. I.		5	37		II Sh. E.*		17	38		II Ec. D.		23	11
I Tr. I.†		6	14		II Tr. E.*		18	36					9.1
I Sh. E.*		7	56		III Ec. D.	23	0	57	8.7	II Oc. R.	28	2	39
I Tr. E.*		8	33		III Oc. R.†		6	10		I Sh. I.*		14	57
I Ec. D.	17	2	49	54.2	I Sh. I.*		7	31		I Tr. I.*		15	17
I Oc. R.		5	42		I Tr. I.*		7	58		I Sh. E.*		17	16
II Ec. D.*		7	15	52.5	I Sh. E.*		9	50		I Tr. E.*		17	36
II Oc. R.*		11	15		I Tr. E.*		10	18		I Ec. D.*	29	12	8
I Sh. I.	18	0	6		IV Sh. I.		21	41					57.4
I Tr. I.		0	40		IV Sh. E.	24	1	14		I Oc. R.*		14	44
I Sh. E.		2	24		IV Tr. I.		1	42		II Sh. I.*		17	25
I Tr. E.		2	59		I Ec. D.		4	43	36.0	II Tr. I.*		18	1
I Ec. D.		21	18	18.1	IV Tr. E.†		5	30		II Sh. E.		20	12
I Oc. R.	19	0	8		I Oc. R.*		7	26		II Tr. E.		20	49
II Sh. I.		1	33		II Ec. D.*		9	52	25.6	III Ec. D.†	30	4	55
II Tr. I.		2	40		II Oc. R.*		13	31					45.7
II Sh. E.		4	21		I Sh. I.	25	2	0		I Sh. I.*		9	26
II Tr. E.		5	29		I Tr. I.		2	25		III Oc. R.*		9	27
III Sh. I.*		10	50		I Sh. E.		4	19		I Tr. I.*		9	43
III Tr. I.*		13	0		I Tr. E.		4	44		I Sh. E.*		11	45
III Sh. E.*		14	12		I Ec. D.		23	12	1.7	I Tr. E.*		12	2
III Tr. E.*		16	26		I Oc. R.	26	1	52		I Ec. D.*	31	6	37
I Sh. I.*		18	34		II Sh. I.		4	7					26.0
I Tr. I.*		19	6		II Tr. I.		4	54		I Oc. R.*		9	10
I Sh. E.		20	53							I Ec. D.*		12	28
I Tr. E.		21	25										59.4
										II Oc. R.*		15	46

The abbreviations denote as follows:—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite. Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress, E. Egress.

MEAN TIME.

DECEMBER.

Phases of the Eclipses of the Satellites for an inverting Telescope.

<p>I. d * </p>	<p>III. d * </p>
<p>II. d * </p>	<p>IV. d r * * </p>

The abbreviations denote as follows :—Ec. Eclipse. Oc. Occultation. Tr. Transit of Satellite.
Sh. Transit of Shadow. D. Disappearance. R. Reappearance. I. Ingress, E. Egress.

MEAN TIME.

JANUARY.

d	h	m		°	'
1	9	4	♀ δ ☾ - - - - ♀	9	40 N.
2	18	13	♀ Stationary.		
2	21	5	♀ δ ☾ - - - - ♀	7	29 N.
5	13	0	♀ greatest Hel. Lat. N.		
5	16	51	♂ δ λ Aquarii ✱ (4 ^m .7) W.		
8	19	24	♂ δ ☾ - - - - ♂	2	12 S.
9	17	29	♀ Stationary.		
10	16	33	♂ δ φ Aquarii ✱ (3 ^m .1) E.		
11	22	26	♀ in Perihelion.		
14	4	10	♀ δ μ Sagittarii ✱ (0 ^m .6) E.		
14	10	2	♀ δ μ Sagittarii ✱ 0 2 N.		
14	15	54	♂ δ ☾ - - - - ♂	5	29 S.
15	11	46	♂ δ ☾ - - - - ♂	5	37 S.
18	-	-	♀ at greatest brilliancy.		
19	5	4	♂ δ ☾ - - - - ♂	1	4 S.
21	3	41	♀ greatest elong. 24 25 W.		
28	18	32	♂ ☿ ☉		
29	0	43	♀ in ☿		
29	12	23	♀ δ ☾ - - - - ♀	9	37 N.
31	10	11	♀ δ ☾ - - - - ♀	3	8 N.

FEBRUARY.

d	h	m		°	'
2	-	-	☉ eclipsed, invis. at Green ^h .		
3	2	56	♀ greatest Hel. Lat. N.		
5	2	45	♂ Stationary.		
6	2	38	♂ Stationary.	0	
6	20	42	♂ δ ☾ - - - - ♂	3	50 S.
8	4	48	♀ in Aphelion.		
10	23	33	♂ δ ☾ - - - - ♂	5	34 S.
11	19	29	♂ δ ☾ - - - - ♂	5	37 S.
15	12	49	♂ δ ☾ - - - - ♂	1	14 S.
17	-	-	☾ eclipsed, invis. at Green ^h .		
18	5	12	♂ ☿ ☉		
21	16	43	♀ δ δ Sagittarii ✱ 0 7 N.		
22	23	0	♀ greatest elong. 46 43 W.		
27	23	28	♀ δ ☾ - - - - ♀	5	55 N.
28	14	49	♀ greatest Hel. Lat. S.		

MARCH.

d	h	m		°	'
3	0	16	♂ in ☿		
3	6	5	♂ ☿ ☉		
4	-	-	☉ eclipsed, invis. at Green ^h .		
4	1	25	♀ δ ☾ - - - - ♀	3	14 S.
7	18	24	♂ δ ☾ - - - - ♂	4	45 S.
8	11	3	♀ in Sup. δ ☉		
10	6	2	♂ δ ☾ - - - - ♂	5	31 S.
11	4	35	♂ δ ☾ - - - - ♂	5	27 S.
14	19	14	♂ δ ☾ - - - - ♂	1	19 S.
19	14	42	♀ in ☿		
19	21	0	♀ δ 29 Capricor. ✱ (2 ^m .5) E.		
20	9	51	♀ δ 29 Capricor. ✱ 0 8 S.		
20	15	20	☉ enters ♍, Spring comm ^a .		
24	4	25	♀ in Perihelion.		
30	1	13	♀ δ ☾ - - - - ♀	0	24 N.
31	4	26	♀ in ☿		

APRIL.

d	h	m		°	'
2	16	33	♀ greatest elong. 18 59 E.		
3	12	15	♀ greatest Hel. Lat. N.		
4	12	22	♀ δ ☾ - - - - ♀	1	58 S.
5	12	54	♂ δ ☾ - - - - ♂	4	52 S.
6	10	56	♂ Stationary.		
6	13	16	♂ δ ☾ - - - - ♂	5	22 S.
7	16	10	♂ δ ☾ - - - - ♂	5	6 S.
11	0	55	♂ δ ☾ - - - - ♂	1	12 S.
11	21	32	♀ Stationary.		
12	2	10	♀ δ λ Aquarii ✱ (4 ^m .1) W.		
15	22	48	♀ δ φ Aquarii ✱ (0 ^m .6) E.		
16	2	33	♀ δ φ Aquarii ✱ 0 4 S.		
22	2	51	♀ in Inf. δ ☉		
26	1	5	♂ ☿ ☉		
26	23	59	♀ in ☿		
27	19	2	♂ δ ♄ - - - - ♂	0	44 N.
29	11	46	♀ δ ☾ - - - - ♀	4	55 S.

MEAN TIME.

MAY.

d	h	m		°	'
1	11	15	♂ δ (	---	♂ 6 5 S.
3	22	44	♂ δ (	---	♂ 5 12 S.
4	5	22	♂ δ (	---	♂ 4 20 S.
4	6	48	♀ in Aphelion.		
4	10	0	♀ Stationary.		
5	6	59	♂ δ (	---	♂ 4 41 S.
7	4	3	♀ in Aphelion.		
8	7	53	♂ δ (	---	♂ 0 52 S.
12	23	17	♀ e Piscium	- *	(3 ^m .4) W.
19	17	22	♀ greatest elong.		25 15 W.
21	2	0	♀ e Piscium	- *	(6 ^m .3) W.
24	21	15	♂ δ ⊙		
27	0	55	♀ greatest Hel. Lat. S.		
27	14	8	♀ greatest Hel. Lat. S.		
29	14	11	♀ δ (	---	♀ 7 4 S.
30	6	58	♀ δ (	---	♀ 8 3 S.
31	10	26	♂ δ (	---	♂ 5 8 S.

JULY.

d	h	m		°	'
2	1	26	⊙ in Apogee.		0 ,
2	7	22	♂ δ (	---	♂ 0 1 S.
13	23	46	♀ δ ♀	---	♀ 0 30 N.
20	15	45	♀ δ ♀	---	♀ 0 1 S.
21	1	33	♂ δ ⊙		
22	7	35	♀ in ♄		
23	18	35	♀ δ α Leonis	- *	(5 ^m .1) E.
23	23	16	♀ in ♄		
25	10	57	♂ δ (	---	♂ 5 13 S.
27	17	6	♂ δ (	---	♂ 3 26 S.
28	5	15	♀ δ (	---	♀ 2 35 S.
29	-	-	⊙ eclipsed, invis. at Green ^h .		
29	5	16	♂ δ (	---	♂ 0 28 S.
29	23	18	♂ δ (	---	♂ 0 23 N.
31	8	0	♀ δ (	---	♀ 0 4 N.
31	14	20	♀ greatest elong.		27 16 E.

JUNE.

d	h	m		°	'
1	21	5	♂ δ (	---	♂ 3 23 S.
2	0	50	♂ δ (	---	♂ 4 15 S.
4	17	55	♂ δ (	---	♂ 0 27 S.
7	3	41	♂ δ ♀	---	♂ 1 0 N.
9	22	48	♀ δ ♀	---	♀ 0 56 S.
15	13	55	♀ in ♄		
20	3	41	♀ in Perihelion.		
21	11	58	⊙ enters ♄, Summer comm ^h .		
22	8	39	♀ δ ♀	---	♀ 1 8 S.
22	16	51	♀ in Sup. δ ⊙		
23	15	12	♀ δ ♀	---	♀ 1 22 N.
25	5	55	♂ δ ⊙		
27	23	6	♂ δ (	---	♂ 5 10 S.
28	9	22	♀ δ ♂	---	♀ 0 44 N.
28	10	5	♀ δ (	---	♀ 5 50 S.
29	20	44	♂ δ (	---	♂ 3 51 S.
30	11	30	♀ greatest Hel. Lat. N.		
30	12	55	♂ δ (	---	♂ 2 5 S.
30	18	35	♀ δ (	---	♀ 0 59 S.

AUGUST.

d	h	m		°	'
3	3	19	♀ in Aphelion.		
8	13	0	♂ δ ⊙		
13	-	-	⊙ eclipsed, invis. at Green ^h .		
13	21	0	♀ Stationary.		0 ,
19	17	58	♂ δ ♀	---	♂ 0 15 N.
20	16	46	♀ δ ♀	---	♀ 0 10 N.
21	12	5	♀ δ ♂	---	♀ 0 4 S.
21	20	22	♂ δ (	---	♂ 5 13 S.
23	13	22	♀ greatest Hel. Lat. S.		
24	12	8	♂ δ (	---	♂ 3 0 S.
24	13	0	♀ in Perihelion.		
26	15	56	♂ δ (	---	♂ 0 47 N.
26	22	2	♂ δ (	---	♂ 1 25 N.
27	-	-	⊙ eclipsed, invis. at Green ^h .		
27	3	58	♀ δ (	---	♀ 1 51 N.
27	17	24	♀ δ (	---	♀ 3 6 S.
27	23	41	♀ in ♄		
28	8	53	♀ in Inf. δ ⊙		
31	4	55	♂ δ ⊙		
31	9	2	♀ δ ♀	---	♀ 5 0 S.

MEAN TIME.

SEPTEMBER.

d	h	m	
2	5	33	♂ δ ♀ Geminor. * (7 ^m .0) W.
4	12	0	♂ greatest Hel. Lat. N.
6	2	6	♀ Stationary. ° ,
6	12	48	♀ δ ♂ - - - - ♀ 2 51 S.
11	13	12	♀ in ☿
13	1	42	♄ Stationary.
13	16	35	♀ greatest elong. 17 53 W.
14	13	0	♀ δ ♂ - - - - ♀ 0 31 S.
15	19	35	♀ greatest Hel. Lat. N.
16	2	56	♀ in Perihelion.
18	2	50	♄ δ ☾ - - - - ♄ 5 6 S.
21	3	59	♄ δ ☾ - - - - ♄ 2 30 S.
23	2	10	☉ enters ♊, Autumn comm ^s .
23	7	14	♄ δ ☾ - - - - ♄ 1 14 N.
24	14	43	♂ δ ☾ - - - - ♂ 3 21 N.
25	8	21	♀ δ ☾ - - - - ♀ 5 3 N.
26	5	9	♀ δ ☾ - - - - ♀ 5 29 N.
26	10	48	♀ greatest Hel. Lat. N.
27	11	38	♀ in Sup. δ ☉

OCTOBER.

d	h	m	
8	19	23	♂ in Aphelion.
10	14	10	♀ in Sup. δ ☉ ° ,
15	7	29	♄ δ ☾ ♄ 4 56 S.
17	15	25	♄ ☐ ☉
18	15	23	♄ δ ☾ - - - - ♄ 1 59 S.
19	15	23	♀ δ ♀ - - - - ♀ 0 51 S.
19	22	30	♀ in ☿
20	10	29	♂ δ ♀ Virginis * (4 ^m .9) W.
20	19	29	♄ δ ☾ - - - - ♄ 1 45 N.
23	6	38	♂ δ ☾ - - - - ♂ 5 0 N.
26	5	51	♀ δ ☾ - - - - ♀ 5 55 N.
26	9	47	♀ δ ☾ - - - - ♀ 4 30 N.
30	2	36	♀ in Aphelion.
30	3	20	♂ δ ♀ Virginis * (2 ^m .0) E.

NOVEMBER.

d	h	m	
10	21	12	♀ in ☿ ° ,
11	12	37	♄ δ ☾ - - - - ♄ 4 49 S.
12	3	38	♄ Stationary.
14	22	28	♄ δ ☾ - - - - ♄ 1 34 S.
17	4	10	♄ δ ☾ - - - - ♄ 2 18 N.
18	2	0	♄ ☐ ☉
18	20	25	♂ δ ♀ Virginis * (6 ^m .4) E.
19	12	41	♀ greatest Hel. Lat. S.
20	21	11	♂ δ ☾ - - - - ♂ 6 7 N.
25	8	0	♀ δ ☾ - - - - ♀ 3 35 N.
25	14	13	♀ greatest elong. 21 36 E.
25	21	10	♀ δ ☾ - - - - ♀ 1 24 N.
27	23	36	♄ ♂ ☉

DECEMBER.

d	h	m	
4	13	42	♀ Stationary. ° ,
5	3	17	♀ δ ♀ - - - - ♀ 0 1 S.
7	16	28	♄ Stationary.
8	12	3	♀ in ☿
8	19	48	♄ δ ☾ - - - - ♄ 4 51 S.
12	3	6	♄ δ ☾ - - - - ♄ 1 26 S.
13	2	13	♀ in Perihelion.
14	5	26	♀ in Inf. δ ☉
14	10	36	♄ δ ☾ - - - - ♄ 2 42 N.
14	21	49	♀ in Aphelion.
19	10	20	♂ δ ☾ - - - - ♂ 6 32 N.
21	20	3	☉ enters ♋, Winter comm ^s .
22	9	45	♀ δ ☾ - - - - ♀ 7 23 N.
23	10	6	♀ greatest Hel. Lat. N.
23	11	55	♂ δ ♀ Virginis * (6 ^m .4) W.
24	9	33	♀ Stationary.
25	16	41	♀ δ ☾ - - - - ♀ 0 7 S.

SATURN'S RING, 1859.

ELEMENTS FOR DETERMINING THE GEOCENTRIC POSITION,
MAGNITUDE, AND APPEARANCE OF SATURN'S RING.

Mean Noon.	<i>p</i>	<i>a</i>	<i>b</i>	<i>a'</i>	<i>b'</i>	<i>l</i>	<i>l'</i>
1858.							
Dec. 16	— 7 21.1	44.56	— 12.78	29.63	— 8.50	— 16 39.7	— 18 23.6
1859.							
Jan. 5	7 23.6	45.63	13.46	30.34	8.95	17 9.3	18 8.7
— 25	7 26.7	46.10	14.09	30.66	9.37	17 47.6	17 53.4
Feb. 14	7 29.5	45.88	14.51	30.51	9.65	18 26.5	17 38.1
Mar. 6	7 31.5	45.00	14.62	29.93	9.72	18 57.2	17 22.6
— 26	7 32.6	43.68	14.40	29.05	9.57	19 14.6	17 7.0
April 15	7 32.7	42.15	13.91	28.03	9.25	19 15.9	16 51.2
May 5	7 31.8	40.64	13.24	27.03	8.81	19 1.2	16 35.3
— 25	7 29.8	39.29	12.49	26.13	8.31	18 31.9	16 19.3
June 14	7 26.6	38.20	11.70	25.41	7.78	17 50.2	16 3.2
July 4	7 22.2	37.43	10.93	24.89	7.27	16 58.8	15 46.9
— 24	7 16.7	36.98	10.20	24.59	6.78	16 0.5	15 30.5
Aug. 13	7 10.2	36.88	9.53	24.53	6.34	14 58.5	15 13.9
Sept. 2	7 3.2	37.13	8.94	24.69	5.95	13 56.3	14 57.3
— 22	6 56.1	37.72	8.46	25.08	5.63	12 58.0	14 40.6
Oct. 12	6 49.7	38.65	8.12	25.70	5.40	12 7.6	14 23.8
Nov. 1	6 44.5	39.87	7.95	26.51	5.28	11 29.7	14 6.8
— 21	6 41.3	41.30	7.98	27.47	5.31	11 8.3	13 49.8
Dec. 11	6 40.5	42.82	8.25	28.47	5.48	11 6.3	13 32.6
— 31	— 6 42.3	44.21	— 8.74	29.40	— 5.81	— 11 23.8	— 13 15.4

p denotes the inclination of the Northern semi-minor axes of the Rings to the circle of Declination ; + East, — West.

a the apparent outer *major* axis of the outer Ring.

b ——— outer *minor* axis of the outer Ring ; + North surface visible,
— South surface visible.

a' ——— inner *major* axis of the inner Ring.

b' ——— inner *minor* axis of the inner Ring.

l the elevation of the Earth above the plane of the Ring, as seen from Saturn,
+ North, — South.

l' the elevation of the Sun above the plane of the Ring, as seen from Saturn;
+ North, — South.

MEAN TIME OF THE GREATEST LIBRATION OF THE MOON'S APPARENT DISC.

	d	h	m	
Jan.	12	0	7	N.E.
	24	2	30	N.W.
Feb.	9	1	27	N.E.
	21	9	53	N.W.
Mar.	8	4	47	N.E.
	21	11	25	N.W.
Apr.	3	9	41	N.E.
	18	0	16	N.W.
	30	10	59	N.E.
May	14	15	33	N.W.
	28	4	40	N.E.
June	10	1	52	N.W.
	25	6	16	N.E.
July	7	13	56	N.W.
	23	11	1	N.E.
Aug.	4	15	6	N.W.
	20	14	23	N.E.
Sept.	1	20	1	N.W.
	17	8	6	N.E.
	29	23	40	N.W.
Oct.	13	22	26	N.E.
	27	20	48	N.W.
Nov.	9	8	8	N.E.
	24	2	26	N.W.
Dec.	6	18	59	N.E.
	20	6	27	N.W.

The Moon's Libration is here supposed to take place in the plane of her Orbit :—and by the time of the greatest Libration of her Apparent Disc is to be understood the instant at which, to an observer at the centre of the Earth, the variation of the Disc from its mean state has attained its maximum.

The right-hand column indicates the quadrant of the Moon's Disc in which the Libration takes place, and in which the greatest change of the Moon's surface will become visible.

ILLUMINATED PORTION OF THE DISCS OF VENUS AND MARS.

1859.	VENUS.	MARS.
Jan. 15	0.230	0.917
Feb. 14	0.449	0.939
Mar. 15	0.594	0.958
Apr. 15	0.711	0.975
May 15	0.802	0.988
June 15	0.880	0.996
July 15	0.938	1.000
Aug. 15	0.979	0.998
Sept. 15	0.998	0.991
Oct. 15	0.997	0.979
Nov. 15	0.978	0.961
Dec. 15	0.946	0.941

The numbers given in this Table represent the versed sines of the illuminated portion of the Discs, the apparent Diameters of the Planets being considered as unity.

MEAN TIME OF HIGH WATER AT LONDON BRIDGE,

Reckoning from Noon of each Day.

Day of the Month	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	0 18	12 45	1 40	14 2	0 31	12 57	1 20	13 37	1 11	13 29	1 59	14 21
2	1 9	13 32	2 21	14 38	1 18	13 38	1 53	14 8	1 47	14 5	2 43	15 5
3	1 54	14 15	2 55	15 11	1 58	14 15	2 23	14 39	2 23	14 41	3 28	15 52
4	2 34	14 52	3 27	15 42	2 30	14 45	2 55	15 11	3 0	15 20	4 17	16 42
5	3 9	15 26	3 56	16 10	3 0	15 14	3 27	15 43	3 41	16 2	5 7	17 34
6	3 42	15 59	4 25	16 40	3 27	15 42	4 0	16 17	4 23	16 45	6 1	18 30
7	4 16	16 32	4 55	17 10	3 57	16 12	4 35	16 55	5 8	17 33	6 59	19 29
8	4 47	17 3	5 26	17 43	4 28	16 44	5 16	17 38	6 2	18 33	8 0	20 31
9	5 20	17 38	6 0	18 18	4 59	17 16	6 2	18 29	7 5	19 40	9 2	21 35
10	5 56	18 14	6 38	19 0	5 34	17 53	7 0	19 36	8 18	21 0	10 7	22 38
11	6 34	18 55	7 24	19 53	6 15	18 38	8 18	21 7	9 38	22 15	11 9	23 40
12	7 16	19 40	8 29	21 12	7 5	19 36	9 55	22 41	10 48	23 19	—	12 10
13	8 7	20 38	10 1	22 53	8 15	21 3	11 22	23 54	11 48	—	0 36	13 1
14	9 14	21 52	11 40	—	9 55	22 48	—	12 21	0 14	12 38	1 25	13 48
15	10 33	23 14	0 21	12 56	11 36	—	0 46	13 9	1 2	13 24	2 10	14 31
16	11 53	—	1 25	13 51	0 14	12 44	1 30	13 50	1 45	14 5	2 51	15 11
17	0 28	13 0	2 15	14 38	1 11	13 35	2 9	14 28	2 25	14 45	3 30	15 46
18	1 28	13 57	3 0	15 21	1 57	14 18	2 47	15 6	3 4	15 23	4 4	16 23
19	2 24	14 49	3 42	16 1	2 38	14 55	3 24	15 42	3 41	15 59	4 42	16 57
20	3 13	15 37	4 20	16 39	3 14	15 33	4 0	16 18	4 18	16 37	5 16	17 35
21	4 0	16 23	4 58	17 15	3 51	16 9	4 36	16 54	4 56	17 15	5 54	18 14
22	4 46	17 7	5 33	17 51	4 27	16 44	5 12	17 31	5 36	17 57	6 34	18 55
23	5 27	17 46	6 9	18 28	5 1	17 19	5 52	18 14	6 19	18 43	7 17	19 42
24	6 7	18 28	6 49	19 10	5 37	17 57	6 39	19 6	7 7	19 34	8 10	20 40
25	6 49	19 10	7 36	20 9	6 17	18 39	7 38	20 17	8 5	20 40	9 10	21 40
26	7 32	19 57	8 51	21 39	7 2	19 32	8 58	21 38	9 14	21 45	10 11	22 44
27	8 27	21 3	10 24	23 10	8 10	20 54	10 15	22 51	10 14	22 42	11 16	23 47
28	9 41	22 22	11 55	—	9 43	22 27	11 22	23 49	11 8	23 34	—	12 17
29	11 6	23 47	—	—	11 11	23 50	—	12 12	—	12 0	0 45	13 13
30	—	12 24	—	—	—	12 20	0 33	12 53	0 25	12 49	1 40	14 6
31	0 53	13 17	—	—	0 43	13 2	—	—	1 13	13 36	—	—

If the time of High Water be required, according to the *civil* mode of reckoning:

1. *For the Morning Tide* :—With the day of the month *preceding* the given date, take the time opposite thereto from the 2nd column of the month, and diminish it by 12 hours.

2. *For the Afternoon Tide* :—With the given date, take the time opposite thereto from the 1st column of the month.

MEAN TIME OF HIGH WATER AT LONDON BRIDGE,

Reckoning from Noon of each Day.

Day of the Month	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
1	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
2	2 32	14 58	3 58	16 20	4 53	17 12	5 21	17 21	6 3	18 28	6 26	18 49
3	3 23	15 48	4 42	17 2	5 30	17 50	5 42	18 3	6 56	19 28	7 14	19 41
4	4 13	16 37	5 23	17 44	6 11	18 33	6 26	18 53	8 5	20 46	8 13	20 47
5	5 0	17 24	6 6	18 27	6 57	19 24	7 26	20 6	9 24	22 0	9 20	21 52
6	5 49	18 14	6 48	19 11	7 57	20 39	8 52	21 35	10 34	23 6	10 22	22 51
7	6 39	19 4	7 36	20 4	9 25	22 11	10 17	22 59	11 34	23 58	11 19	23 46
8	7 29	19 55	8 37	21 15	10 55	23 38	11 36	—	—	12 19	—	12 11
9	8 22	20 52	9 56	22 41	—	12 14	0 6	12 28	0 38	12 56	0 35	12 57
10	9 23	21 55	11 22	23 59	0 41	13 1	0 46	13 3	1 14	13 32	1 20	13 43
11	10 30	23 6	—	12 33	1 21	13 40	1 19	13 35	1 50	14 8	2 5	14 27
12	11 43	—	1 2	13 24	1 57	14 12	1 51	14 5	2 26	14 44	2 48	15 10
13	0 16	12 46	1 45	14 5	2 27	14 41	2 20	14 35	3 2	15 21	3 33	15 57
14	1 11	13 35	2 23	14 40	2 55	15 8	2 51	15 7	3 41	16 1	4 21	16 45
15	1 58	14 18	2 56	15 11	3 22	15 37	3 23	15 39	4 22	16 45	5 9	17 34
16	2 38	14 57	3 26	15 40	3 52	16 7	3 56	16 14	5 9	17 35	5 59	18 24
17	3 16	15 33	3 54	16 8	4 22	16 37	4 33	16 53	6 2	18 31	6 50	19 18
18	3 49	16 5	4 22	16 36	4 53	17 11	5 14	17 37	7 2	19 37	7 49	20 21
19	4 20	16 36	4 51	17 7	5 30	17 51	6 2	18 31	8 16	20 58	8 53	21 26
20	4 52	17 8	5 24	17 41	6 13	18 38	7 5	19 45	9 34	22 9	10 0	22 35
21	5 25	17 42	5 58	18 18	7 8	19 47	8 32	21 17	10 43	23 14	11 10	23 42
22	5 59	18 17	6 40	19 3	8 33	21 22	10 1	22 43	11 43	—	—	12 13
23	6 36	18 57	7 30	20 4	10 12	23 0	11 20	23 49	0 10	12 35	0 41	13 7
24	7 19	19 43	8 45	21 31	11 40	—	—	12 14	0 59	13 23	1 31	13 54
25	8 10	20 43	10 18	23 5	0 11	12 37	0 37	12 59	1 45	14 6	2 16	14 38
26	9 21	22 0	11 48	—	1 2	13 25	1 21	13 42	2 26	14 46	2 59	15 18
27	10 40	23 19	0 23	12 54	1 47	14 7	2 3	14 23	3 6	15 26	3 36	15 54
28	11 57	—	1 22	13 47	2 27	14 47	2 43	15 3	3 46	16 5	4 12	16 29
29	0 32	13 3	2 10	14 33	3 7	15 27	3 22	15 41	4 24	16 43	4 46	17 3
30	1 32	13 59	2 54	15 15	3 47	16 6	4 0	16 19	5 2	17 22	5 21	17 39
31	2 24	14 49	3 35	15 55	4 24	16 43	4 38	16 59	5 43	18 4	5 57	18 15
	3 13	15 36	4 15	16 34	-	-	5 20	17 41	-	-	6 34	18 54

*Example:—*Required the Mean Time of High Water at London Bridge, for the Morning and Afternoon of Jan. 14, 1859.

1. Opposite the day *preceding*, viz. 13, and in the 2nd column, under JANUARY, is 20^h 38^m, which, being diminished by 12^h, gives 8^h 38^m for the Time of High Water in the Morning.

2. Opposite the given date, and in the 1st column, under JANUARY, is 9^h 14^m, which is the Time of High Water in the Afternoon.

TIME OF HIGH WATER, ON THE FULL AND CHANGE OF THE MOON,
AT THE UNDERMENTIONED PORTS AND PLACES.

PLACE.	SITUATION.	Time of High Water.	PLACE.	SITUATION.	Time of High Water.
		h m			h m
Aberdeen Bar	Scotland	- 1 13	Chausey Islands	France	- 6 9
Aberdovy	Wales	- 8 15	Cherbourg	France	- 7 49
Aberystwith	Wales	- 7 31	Chichester Harbour	England	- 11 30
Achill-beg	Ireland	- 5 14	Christchurch Harbour	England	- 8 51
Agnes (St.)	Scilly Isles	- 4 40	Clear Cape	Ireland	- 4 0
Air Point	Isle of Man	- 11 7	Coquet Island	England	- 2 45
Aldborough	England	- 10 45	Cordouan	France	- 3 37
Alderney Pier	English Channel	6 46	Cork Harbour	Ireland	- 5 1
Amlwch Port	Anglesea	- 10 30	Cornwall Cape	England	- 4 30
Antwerp	Netherlands	- 4 25	Cowes	Isle of Wight	10 46
Arran Isle	Scotland	- 11 15	Cromartie	Scotland	- 11 55
Arundel Bar	England	- 11 15	Cuckolds Point	River Thames	2 1
Ballyshannon Bar	Ireland	- 5 30	Cuxhaven	Germany	- 0 44
Balta	Shetland	- 9 45	Dartmouth Harbour	England	- 6 10
Baltimore	Ireland	- 4 23	Deal	England	- 11 15
Banff	Scotland	- 0 20	Dee River (Saltney)	Scotland	- 0 7
Bantry Bay	Ireland	- 4 14	Devonport Dock Yard	England	- 5 43
Bardsey Island	Wales	- 7 45	Dielette Harbour	France	- 6 45
Barmouth	Wales	- 7 45	Dieppe	France	- 11 6
Barnstaple Bar	England	- 5 47	Dingle Bay	Ireland	- 3 30
Beachy Head	England	- 11 50	Donaghadee Pier	Ireland	- 11 13
Beaumaris	Wales	- 10 32	Donegal Bar	Ireland	- 5 5
Belfast	Ireland	- 10 43	Douglas Harbour	Isle of Man	- 11 12
Berwick	England	- 2 22	Dover Pier	England	- 11 12
Blakeney Harbour	England	- 6 50	Downing Bay	Ireland	- 5 20
Blythe	England	- 2 45	Sheephaven		
Bolt Head	England	- 5 45	Downs (Stream)	England	- 2 45
Bordeaux	France	- 6 50	Dublin Bar	Ireland	- 11 12
Boston	England	- 7 15	Dunbar	Scotland	- 2 20
Boulogne	France	- 11 25	Duncansby Head	Scotland	- 8 15
Brehat Island	France	- 5 51	Dundalk Bar	Ireland	- 11 0
Brest Harbour	France	- 3 47	Dundee	Scotland	- 2 32
Bridgewater	England	- 6 45	Dungarvan	Ireland	- 5 19
Bridlington	England	- 4 39	Dungeness	England	- 10 32
Bridport	England	- 6 0	Dunkerque	France	- 0 13
Brielle	Netherlands	- 3 0	Eddystone	English Chan.	5 25
Brighton	England	- 11 38	Exmouth Bar	England	- 6 35
Bristol	England	- 7 21	Eyemouth	Scotland	- 2 15
Brouwershaven	Netherlands	- 2 0	Falmouth	England	- 5 25
Burnt Island	Scotland	- 2 30	Fécamp	France	- 10 44
Caermarthen Bar	Wales	- 6 10	Flamboro' Head	England	- 4 29
Calais	France	- 11 49	Flatholm	England	- 6 54
Caldy Island	Coast of Wales	- 6 0	Flushing	Netherlands	- 1 20
Calf of Man	St. Geo. Channel	11 5	Fowey	England	- 5 30
Cancalle Bay	France	- 6 9	Galloway (Mull)	Scotland	- 11 15
Cantire (Mull)	Scotland	- 9 0	Galway Bay	Ireland	- 4 35
Cardigan Bar	Wales	- 7 0	Glenan Islands	France	- 3 25
Carlingford Bar	Ireland	- 10 40	Goeree (West Gat.)	Holland	- 1 45
Carnarvon Bar	Wales	- 9 33	Granville	France	- 6 15
Chatham	England	- 1 2	Gravelines	France	- 11 53

TIME OF HIGH WATER, ON THE FULL AND CHANGE OF THE MOON,
AT THE UNDERMENTIONED PORTS AND PLACES.

PLACE.	SITUATION.	Time of High Water.	PLACE.	SITUATION.	Time of High Water.
		h m			h m
Gravesend - -	England - -	1 14	Penzance - - -	England - -	4 30
Greenock - -	W.C.of Scotland	0 8	Peterhead - - -	Scotland - -	0 34
Guernsey Pier -	English Channel	6 30	Portland Race (Stream)	England - -	9 15
Gunfleet - - -	River Thames	12 0	Portland (Breakwater)	England - -	6 56
Hartlepool - -	England - -	3 28	Port Patrick - -	Scotland - -	11 14
Harwich - - -	England - -	0 6	Portsmouth Dock Yd.	England - -	11 41
Hastings - - -	England - -	10 53	Ramsgate Harbour	England - -	11 41
Havre de Grace -	France - -	9 51	Rathlin L, Church Bay	N. C. of Irel.	9 0
Heligoland - -	German Ocean	11 45	Rye Bay - - - -	England - -	11 20
Hellevoetsluis -	Holland - -	2 0	Salcombe - - -	England - -	6 0
Hollesley - - -	England - -	11 30	Saltees - - - -	Ireland - -	5 40
Holyhead - - -	Wales - -	10 11	Scalloway - - -	Shetland - -	9 45
Holy Island Harb.	England - -	2 30	Scarborough - -	England - -	4 11
Honfleur Harbour	France - -	9 29	Scilly Islands - -	England - -	4 42
Horn Point - - -	Jutland - -	13 44	Selsea Harbour - -	England - -	11 46
Howth Harbour -	Ireland - -	11 8	Shannon Mouth -	Ireland - -	3 50
Hull - - - -	England - -	6 29	Sheerness Dock Yard	England - -	0 37
Humber River Ent.	England - -	6 0	Shields (North) - -	England - -	3 31
Ipswich - - -	England - -	0 30	Shoreham Harbour	England - -	11 34
Ile de Bas - - -	France - -	4 50	Skerries - - - -	Ireland - -	4 45
Jersey (St. Aubin)	English Channel	6 21	Sligo Bay, Ballisadare	Ireland - -	6 0
Kenmare River -	Ireland - -	3 42	Solebay - - - -	England - -	10 30
King Road - - -	Bristol Channel	6 45	Southampton - -	England - -	11 40
Kingstown Harb.	Ireland - -	11 10	Spithead (Stream) -	England - -	9 30
Kinsale Harbour	Ireland - -	4 43	Spurn Point - - -	England - -	5 50
Kirkcudbright -	Scotland - -	11 15	St. Helen's Harbour	England - -	11 0
La Hougue Harb.	France - -	8 42	St. Ives - - - -	England - -	4 30
Land's End - - -	England - -	4 30	St. Malo - - - -	France - -	6 5
Leith Pier - - -	Scotland - -	2 17	Stromness - - -	Orkneys - -	9 0
Lerwick Harbour	Shetland - -	10 30	Sunderland - - -	England - -	3 22
Lewis Islands -	Scotland - -	6 0	Swansea Bay - - -	Wales - -	6 10
Liverpool	England - -	11 16	Tay Bar - - - -	Scotland - -	2 6
(Clarence Dock)			Tees River Bar - -	England - -	3 30
London Bridge -	River Thames	2 7	Terschelling, West -	Holland - -	8 40
Margate Pier - -	England - -	0 12	Texel, Helder Road	Holland - -	9 0
Milford Haven Ent.	Wales - -	5 53	E. Stream - - - -		
Minehead Pier -	England - -	6 30	Torbay - - - -	England - -	6 10
Montrose - - -	Scotland - -	2 5	Tralee Bay - - -	Ireland - -	3 45
Morlaix - - -	N. C. of France	4 53	Tynemouth Bar - -	England - -	2 50
Needles Point -	Ile of Wight -	9 45	Waterford Harbour	Ireland - -	6 6
Newcastle - - -	England - -	4 22	Wexford Harbour -	Ireland - -	7 21
Newhaven - - -	England - -	11 51	Weymouth - - -	England - -	7 0
Newport - - -	Wales - -	6 45	Whitby - - - -	England - -	3 45
Nieuport - - -	France - -	11 45	Wick - - - -	Scotland - -	11 22
Nore Light (Stream)	River Thames	1 9	Wicklow - - - -	Ireland - -	10 30
Orfordness - - -	England - -	11 31	Wisbeach - - -	England - -	7 30
Ostend - - - -	Flanders - -	0 55	Wranger Oog - - -	E. Friesland	12 0
Pembroke Dock Yd.	Wales - -	6 12	Yarmouth Roads -	England - -	9 17
Pentland Firth -	Scotland - -	11 0	Youghall - - - -	Ireland - -	5 14

TABLE, SHOWING THE CORRECTION REQUIRED ON ACCOUNT OF SECOND DIFFERENCES,

In finding the Greenwich Time corresponding to a reduced Lunar Distance.

Arguments:—Approximate Interval and Difference of Proportional Logarithms.

Approximate Interval.			Difference of the Proportional Logarithms in the Ephemeris.																											
			2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52		
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s		
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	10	2	50	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3		
0	20	2	40	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6		
0	30	2	30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9		
0	40	2	20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	11	11		
0	50	2	10	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13		
1	0	2	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	14	14		
1	10	1	50	1	1	2	2	3	4	4	5	6	6	7	8	8	9	9	10	10	11	11	12	13	14	15	15			
1	20	1	40	1	1	2	3	3	4	4	5	6	7	7	8	9	9	10	10	11	12	12	13	14	15	16	16			
1	30	1	30	1	1	2	3	3	4	4	5	6	7	8	8	9	9	10	11	11	12	12	13	14	15	16	17			
Approximate Interval.			Difference of the Proportional Logarithms in the Ephemeris.																											
			54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102			
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s			
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	10	2	50	4	4	4	4	4	4	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7	7	7			
0	20	2	40	7	7	7	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	13	13	13			
0	30	2	30	9	10	10	11	11	12	12	13	13	13	14	14	14	15	15	16	16	16	17	17	17	18	18	18			
0	40	2	20	12	12	13	13	14	14	15	16	16	17	17	18	18	19	19	20	20	21	21	22	22	23	23	23			
0	50	2	10	14	14	15	16	16	17	18	19	19	20	20	21	21	22	22	23	23	24	24	25	25	26	26	26			
1	0	2	0	15	16	16	17	18	18	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28	28			
1	10	1	50	16	17	17	18	19	19	20	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30	30			
1	20	1	40	17	17	18	19	20	20	21	22	23	23	24	25	25	26	26	27	28	28	29	30	31	31	31	31			
1	30	1	30	17	18	18	19	20	21	22	23	23	24	24	25	26	27	27	28	29	29	30	31	31	32	32	32			
Approximate Interval.			Difference of the Proportional Logarithms in the Ephemeris.																											
			104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138										
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s											
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
0	10	2	50	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9											
0	20	2	40	13	13	13	14	14	14	15	15	15	15	15	16	16	16	17	17											
0	30	2	30	18	18	19	19	19	20	20	20	21	21	21	22	22	23	23	24											
0	40	2	20	22	23	23	24	24	25	25	26	26	27	27	28	28	29	29	30											
0	50	2	10	26	26	27	27	28	29	29	30	30	31	31	32	32	33	33	34											
1	0	2	0	29	29	30	30	31	31	32	33	33	34	35	35	36	37	37	38											
1	10	1	50	31	31	32	32	33	34	34	35	35	36	37	37	38	39	40	41											
1	20	1	40	32	33	33	34	34	35	35	36	37	38	38	39	40	41	41	42											
1	30	1	30	32	33	34	34	35	35	36	37	38	39	39	40	41	42	42	43											

The Correction is to be added to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TABLES FOR DETERMINING THE LATITUDE BY OBSERVATIONS
OF THE POLE STAR OUT OF THE MERIDIAN.

TABLE I

Containing the *First* Correction.*Argument*:—Sidereal Time of Observation.

Sidereal Time.	Correction.	Sidereal Time.	Sidereal Time.	Correction.	Sidereal Time.
h m	° ' " +	h m	h m	° ' " +	h m
0 0	— 1 22 15 +	12 0	6 0	— 0 25 9 +	18 0
10	1 23 16	10	10	0 21 32	10
20	1 24 7	20	20	0 17 53	20
30	1 24 49	30	30	0 14 12	30
40	1 25 22	40	40	0 10 29	40
50	1 25 44	50	50	0 6 45	50
1 0	1 25 57	13 0	7 0	— 0 3 0 +	19 0
10	1 26 0	10	10	+ 0 0 45 —	10
20	1 25 53	20	20	0 4 30	20
30	1 25 36	30	30	0 8 15	30
40	1 25 10	40	40	0 11 58	40
50	1 24 34	50	50	0 15 40	50
2 0	1 23 48	14 0	8 0	0 19 21	20 0
10	1 22 52	10	10	0 22 59	10
20	1 21 48	20	20	0 26 35	20
30	1 20 33	30	30	0 30 7	30
40	1 19 10	40	40	0 33 36	40
50	1 17 37	50	50	0 37 1	50
3 0	1 15 56	15 0	9 0	0 40 23	21 0
10	1 14 6	10	10	0 43 39	10
20	1 12 8	20	20	0 46 50	20
30	1 10 1	30	30	0 49 56	30
40	1 7 46	40	40	0 52 57	40
50	1 5 24	50	50	0 55 51	50
4 0	1 2 54	16 0	10 0	0 58 39	22 0
10	1 0 17	10	10	1 1 20	10
20	0 57 33	20	20	1 3 55	20
30	0 54 42	30	30	1 6 22	30
40	0 51 45	40	40	1 8 41	40
50	0 48 43	50	50	1 10 52	50
5 0	0 45 34	17 0	11 0	1 12 56	23 0
10	0 42 21	10	10	1 14 51	10
20	0 39 3	20	20	1 16 38	20
30	0 35 40	30	30	1 18 15	30
40	0 32 13	40	40	1 19 44	40
50	0 28 42	50	50	1 21 4	50
6 0	— 0 25 9 +	18 0	12 0	+ 1 22 15 —	24 0

TABLE II.

Containing the *Second Correction*. (*always to be added*.)*Arguments*:—Sidereal Time and Altitude.

Sidereal Time.	Altitude.								Sidereal Time.
	° 0	° 5	° 10	° 15	° 20	° 25	° 30	° 35	
h m	' "	' "	' "	' "	' "	' "	' "	' "	h m
0 0	0 0	0 0	0 1	0 1	0 2	0 3	0 3	0 4	12 0
30	0 0	0 0	0 0	0 0	0 1	0 1	0 1	0 1	30
1 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	13 0
30	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	30
2 0	0 0	0 0	0 1	0 1	0 1	0 2	0 2	0 2	14 0
30	0 0	0 1	0 1	0 2	0 3	0 4	0 5	0 6	30
3 0	0 0	0 1	0 2	0 4	0 5	0 7	0 8	0 10	15 0
30	0 0	0 2	0 4	0 6	0 8	0 10	0 13	0 15	30
4 0	0 0	0 3	0 5	0 8	0 11	0 14	0 17	0 21	16 0
30	0 0	0 3	0 7	0 10	0 14	0 18	0 22	0 27	30
5 0	0 0	0 4	0 8	0 12	0 17	0 22	0 27	0 33	17 0
30	0 0	0 5	0 9	0 14	0 19	0 25	0 31	0 37	30
6 0	0 0	0 5	0 10	0 16	0 21	0 28	0 34	0 41	18 0
30	0 0	0 5	0 11	0 17	0 23	0 29	0 36	0 44	30
7 0	0 0	0 6	0 11	0 17	0 23	0 30	0 37	0 45	19 0
30	0 0	0 6	0 11	0 17	0 23	0 30	0 37	0 45	30
8 0	0 0	0 5	0 11	0 16	0 22	0 29	0 35	0 43	20 0
30	0 0	0 5	0 10	0 15	0 21	0 26	0 33	0 40	30
9 0	0 0	0 4	0 9	0 13	0 18	0 23	0 29	0 35	21 0
30	0 0	0 4	0 8	0 11	0 16	0 20	0 25	0 30	30
10 0	0 0	0 3	0 6	0 9	0 13	0 16	0 20	0 24	22 0
30	0 0	0 2	0 5	0 7	0 10	0 12	0 15	0 18	30
11 0	0 0	0 2	0 3	0 5	0 7	0 8	0 10	0 13	23 0
30	0 0	0 1	0 2	0 3	0 4	0 5	0 6	0 8	30
12 0	0 0	0 0	0 0	0 1	0 2	0 3	0 3	0 4	24 0

TABLE III. (*for 1859*.)Containing the *Third Correction*. (*always to be added*.)*Arguments*:—Sidereal Time and Date.

Sidereal Time.	Jan. 1.	Feb. 1.	March 1.	April 1.	May 1.	June 1.	July 1.
h	' "	' "	' "	' "	' "	' "	' "
0	0 51	0 48	0 42	0 32	0 24	0 21	0 22
2	0 56	0 58	0 55	0 47	0 38	0 30	0 27
4	1 2	1 9	1 10	1 6	0 57	0 48	0 40
6	1 7	1 17	1 22	1 22	1 18	1 6	0 59
8	1 11	1 20	1 28	1 33	1 33	1 27	1 18
10	1 11	1 18	1 27	1 35	1 40	1 38	1 32
12	1 9	1 12	1 18	1 28	1 36	1 39	1 38
14	1 4	1 2	1 5	1 13	1 22	1 30	1 33
16	0 58	0 51	0 50	0 54	1 3	1 12	1 20
18	0 53	0 43	0 38	0 38	0 42	0 54	1 1
20	0 49	0 40	0 32	0 27	0 27	0 33	0 42
22	0 49	0 42	0 33	0 25	0 20	0 22	0 28
24	0 51	0 48	0 42	0 32	0 24	0 21	0 22

TABLE II.

Containing the *Second* Correction. (*always to be added.*)
Arguments:—Sidereal Time and Altitude.

Sidereal Time.		Altitude.									Sidereal Time.						
		35°	40°	45°	50°	55°	60°	65°	70°								
h	m	'	"	'	"	'	"	'	"	'	"	'	"	h	m		
0	0	0	4	0	5	0	6	0	7	0	8	0	10	0	12	0	15
	30	0	1	0	1	0	2	0	2	0	3	0	3	0	4	0	5
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	30	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0	2
2	0	0	2	0	3	0	3	0	4	0	5	0	6	0	7	0	9
	30	0	6	0	7	0	8	0	9	0	11	0	14	0	17	0	22
3	0	0	10	0	12	0	14	0	17	0	20	0	25	0	31	0	39
	30	0	15	0	18	0	22	0	26	0	31	0	38	0	47	1	0
4	0	0	21	0	25	0	30	0	36	0	43	0	52	1	4	1	22
	30	0	27	0	32	0	38	0	46	0	55	1	7	1	22	1	46
5	0	0	33	0	39	0	46	0	55	1	6	1	20	1	40	2	8
	30	0	37	0	45	0	53	1	4	1	16	1	33	1	55	2	27
6	0	0	41	0	50	0	59	1	10	1	24	1	42	2	7	2	42
	30	0	44	0	53	1	3	1	15	1	30	1	49	2	15	2	52
7	0	0	45	0	54	1	4	1	16	1	32	1	51	2	18	2	57
	30	0	45	0	54	1	4	1	16	1	31	1	51	2	17	2	56
8	0	c	43	0	51	1	1	1	13	1	28	1	49	2	11	2	48
	30	c	40	0	47	0	57	1	7	1	21	1	40	2	1	2	36
9	0	c	35	0	42	0	50	1	0	1	12	1	27	1	48	2	18
	30	c	30	0	36	0	43	0	51	1	1	1	14	1	32	1	58
10	0	c	24	0	29	0	35	0	41	0	49	1	0	1	14	1	35
	30	c	18	0	22	0	26	0	31	0	37	0	45	0	56	1	12
11	0	c	13	0	15	0	18	0	22	0	26	0	31	0	39	0	50
	30	c	8	0	9	0	11	0	13	0	16	0	19	0	24	0	30
12	0	0	4	0	5	0	6	0	7	0	8	0	10	0	12	0	15

TABLE III. (*for 1859.*)

Containing the *Third* Correction. (*always to be added.*)
Arguments:—Sidereal Time and Date.

Sidereal Time.	July 1.	Aug. 1.	Sept. 1.	Oct. 1.	Nov. 1.	Dec. 1.	Dec. 31.
h	' "	' "	' "	' "	' "	' "	' "
0	0 22	0 29	0 39	0 51	1 2	1 10	1 14
2	0 27	0 28	0 35	0 44	0 56	1 6	1 14
4	0 40	0 36	0 37	0 42	0 50	1 1	1 10
6	0 59	0 51	0 45	0 44	0 48	0 55	1 4
8	1 18	1 8	0 58	0 51	0 48	0 50	0 57
10	1 32	1 22	1 11	1 0	0 52	0 48	0 50
12	1 38	1 31	1 21	1 9	0 58	0 50	0 46
14	1 33	1 32	1 25	1 16	1 4	0 54	0 46
16	1 20	1 24	1 23	1 18	1 10	0 59	0 50
18	1 1	1 9	1 15	1 16	1 12	1 5	0 56
20	0 42	0 52	1 2	1 9	1 12	1 10	1 3
22	0 28	0 38	0 49	1 0	1 8	1 12	1 10
24	0 22	0 29	0 39	0 51	1 2	1 10	1 14

TABLES.

TABLE

For converting INTERVALS of MEAN SOLAR Time into Equivalent INTERVALS of SIDEREAL Time.

HOURS.				MINUTES.				SECONDS.			
Hours of Mean Time.	Equivalents in Sidereal Time.			Minutes of Mean Time.	Equivalents in Sidereal Time.			Seconds of Mean Time.	Equivalents in Sidereal Time.		
1	h	m	s	1	m	s	31	m	s	1	s
1	1	0	9.8565	1	1	0.1643	31	31	5.0925	1	1.0027
2	2	0	19.7130	2	2	0.3286	32	32	5.2568	2	2.0055
3	3	0	29.5694	3	3	0.4928	33	33	5.4211	3	3.0082
4	4	0	39.4259	4	4	0.6571	34	34	5.5853	4	4.0110
5	5	0	49.2824	5	5	0.8214	35	35	5.7496	5	5.0137
6	6	0	59.1388	6	6	0.9857	36	36	5.9139	6	6.0164
7	7	1	8.9953	7	7	1.1499	37	37	6.0782	7	7.0192
8	8	1	18.8518	8	8	1.3142	38	38	6.2424	8	8.0219
9	9	1	28.7083	9	9	1.4785	39	39	6.4067	9	9.0246
10	10	1	38.5647	10	10	1.6428	40	40	6.5710	10	10.0274
11	11	1	48.4212	11	11	1.8070	41	41	6.7353	11	11.0301
12	12	1	58.2777	12	12	1.9713	42	42	6.8995	12	12.0329
13	13	2	8.1342	13	13	2.1356	43	43	7.0638	13	13.0356
14	14	2	17.9906	14	14	2.2998	44	44	7.2281	14	14.0383
15	15	2	27.8471	15	15	2.4641	45	45	7.3924	15	15.0411
16	16	2	37.7036	16	16	2.6284	46	46	7.5566	16	16.0438
17	17	2	47.5600	17	17	2.7927	47	47	7.7209	17	17.0465
18	18	2	57.4165	18	18	2.9569	48	48	7.8852	18	18.0493
19	19	3	7.2730	19	19	3.1212	49	49	8.0495	19	19.0520
20	20	3	17.1295	20	20	3.2855	50	50	8.2137	20	20.0548
21	21	3	26.9859	21	21	3.4498	51	51	8.3780	21	21.0575
22	22	3	36.8424	22	22	3.6140	52	52	8.5423	22	22.0602
23	23	3	46.6989	23	23	3.7783	53	53	8.7066	23	23.0630
24	24	3	56.5554	24	24	3.9426	54	54	8.8708	24	24.0657
				25	25	4.1069	55	55	9.0351	25	25.0685
				26	26	4.2711	56	56	9.1994	26	26.0712
				27	27	4.4354	57	57	9.3637	27	27.0739
				28	28	4.5997	58	58	9.5279	28	28.0767
				29	29	4.7640	59	59	9.6922	29	29.0794
				30	30	4.9282	60	60	9.8565	30	30.0821
										55	55.1506
										56	56.1533
										57	57.1561
										58	58.1588
										59	59.1615
										60	60.1643

TABLE

For converting INTERVALS of MEAN SOLAR Time into Equivalent INTERVALS of SIDEREAL Time.

FRACTIONS OF A SECOND.

Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.
0.01	0.01003	0.34	0.34093	0.67	0.67183
0.02	0.02006	0.35	0.35096	0.68	0.68186
0.03	0.03008	0.36	0.36099	0.69	0.69189
0.04	0.04011	0.37	0.37101	0.70	0.70192
0.05	0.05014	0.38	0.38104	0.71	0.71194
0.06	0.06016	0.39	0.39107	0.72	0.72197
0.07	0.07019	0.40	0.40110	0.73	0.73200
0.08	0.08022	0.41	0.41112	0.74	0.74203
0.09	0.09025	0.42	0.42115	0.75	0.75205
0.10	0.10027	0.43	0.43118	0.76	0.76208
0.11	0.11030	0.44	0.44120	0.77	0.77211
0.12	0.12033	0.45	0.45123	0.78	0.78214
0.13	0.13036	0.46	0.46126	0.79	0.79216
0.14	0.14038	0.47	0.47129	0.80	0.80219
0.15	0.15041	0.48	0.48131	0.81	0.81222
0.16	0.16044	0.49	0.49134	0.82	0.82225
0.17	0.17047	0.50	0.50137	0.83	0.83227
0.18	0.18049	0.51	0.51140	0.84	0.84230
0.19	0.19052	0.52	0.52142	0.85	0.85233
0.20	0.20055	0.53	0.53145	0.86	0.86235
0.21	0.21057	0.54	0.54148	0.87	0.87238
0.22	0.22060	0.55	0.55151	0.88	0.88241
0.23	0.23063	0.56	0.56153	0.89	0.89244
0.24	0.24066	0.57	0.57156	0.90	0.90246
0.25	0.25068	0.58	0.58159	0.91	0.91249
0.26	0.26071	0.59	0.59162	0.92	0.92252
0.27	0.27074	0.60	0.60164	0.93	0.93255
0.28	0.28077	0.61	0.61167	0.94	0.94257
0.29	0.29079	0.62	0.62170	0.95	0.95260
0.30	0.30082	0.63	0.63173	0.96	0.96263
0.31	0.31085	0.64	0.64175	0.97	0.97266
0.32	0.32088	0.65	0.65178	0.98	0.98268
0.33	0.33090	0.66	0.66181	0.99	0.99271

This TABLE is useful for the conversion of MEAN SOLAR Time into SIDEREAL Time.
 Sidereal Time required = Sidereal Time at the preceding Mean Noon + the Equivalent to the given Mean Time.

EXAMPLE.—To convert 2^h 22^m 25^s.62 Mean Time at Greenwich, Jan. 7, 1859, into Sidereal Time.

Sidereal Time at the preceding Mean Noon, viz. January 7 ----- 19 6 5.24 For Mean Intervals, { 2 ^h 0 ^m 0 ^s } { 22 0 } The Table gives the Equivalent { 25 0 } Sidereal Intervals, { 0.62 }	h m s 19 6 5.24 2 0 19.713 22 3.614 25.069 0.62 <hr/> 21 28 54.26 The Sum is the Sidereal Time required
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TABLE

For converting INTERVALS of SIDEREAL TIME into Equivalent INTERVALS of
MEAN SOLAR TIME.

FRACTIONS OF A SECOND.

Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.
0.01	0.00997	0.34	0.33907	0.67	0.66817
0.02	0.01995	0.35	0.34904	0.68	0.67814
0.03	0.02992	0.36	0.35902	0.69	0.68812
0.04	0.03989	0.37	0.36899	0.70	0.69809
0.05	0.04986	0.38	0.37896	0.71	0.70806
0.06	0.05984	0.39	0.38894	0.72	0.71803
0.07	0.06981	0.40	0.39891	0.73	0.72801
0.08	0.07978	0.41	0.40888	0.74	0.73798
0.09	0.08975	0.42	0.41885	0.75	0.74795
0.10	0.09973	0.43	0.42883	0.76	0.75793
0.11	0.10970	0.44	0.43880	0.77	0.76790
0.12	0.11967	0.45	0.44877	0.78	0.77787
0.13	0.12965	0.46	0.45874	0.79	0.78784
0.14	0.13962	0.47	0.46872	0.80	0.79782
0.15	0.14959	0.48	0.47869	0.81	0.80779
0.16	0.15956	0.49	0.48866	0.82	0.81776
0.17	0.16954	0.50	0.49864	0.83	0.82773
0.18	0.17951	0.51	0.50861	0.84	0.83771
0.19	0.18948	0.52	0.51858	0.85	0.84768
0.20	0.19945	0.53	0.52855	0.86	0.85765
0.21	0.20943	0.54	0.53853	0.87	0.86762
0.22	0.21940	0.55	0.54850	0.88	0.87760
0.23	0.22937	0.56	0.55847	0.89	0.88757
0.24	0.23934	0.57	0.56844	0.90	0.89754
0.25	0.24932	0.58	0.57842	0.91	0.90752
0.26	0.25929	0.59	0.58839	0.92	0.91749
0.27	0.26926	0.60	0.59836	0.93	0.92746
0.28	0.27924	0.61	0.60833	0.94	0.93743
0.29	0.28921	0.62	0.61831	0.95	0.94741
0.30	0.29918	0.63	0.62828	0.96	0.95738
0.31	0.30915	0.64	0.63825	0.97	0.96735
0.32	0.31913	0.65	0.64823	0.98	0.97732
0.33	0.32910	0.66	0.65820	0.99	0.98730

This TABLE is useful for the conversion of SIDEREAL into MEAN SOLAR TIME.
Mean Solar Time required = Mean Time at the preceding Sidereal Noon + the Equivalent to the given Sidereal Time.
EXAMPLE.—To convert 21^h 28^m 54^s.26 Sidereal Time at Greenwich, Jan. 7, 1859, into Mean Time.

<p>Mean Time at the preceding Sidereal Noon, viz. ----- January 6 - - - 4^h 57^m 3^s.52</p> <p>For Sidereal Intervals, { 21^h 28^m 54^s.26 } The Table gives the Equivalent { 20^h 56^m 33^s.579</p> <p style="text-align: center;">Mean Intervals, { 54^s.26 } { 27^s 55^s.413</p> <p style="text-align: right;">53^s.853</p>	<p style="text-align: right;">.259</p> <p style="text-align: right;">The Sum is the Mean Time required, Jan. 7 - 3 22 25^s.63</p>
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LATITUDES AND LONGITUDES OF PUBLIC OBSERVATORIES.

*** The Longitudes are reckoned from the Meridian of Greenwich.

ALTONA - - - -	Lat. $53^{\circ} 32' 45'' \cdot 3$ N.	<i>Gauss on the Latitudes of Göttingen and Altona</i> , page 71. (Göttingen, 1828.)
	Long. $0^h 39^m 46^s \cdot 14$ E.	<i>Expédition Chronométrique exécutée entre Altona et Greenwich, &c.</i> (St. Petersburg, 1845.)
ARMAGH - - - -	Lat. $54^{\circ} 21' 12'' \cdot 7$ N.	} Communicated by the Rev. Dr. Robinson.
	Long. $0^h 26^m 35^s \cdot 5$ W.	
ATHENS - - - -	Lat. $37^{\circ} 58' 20''$ N.	<i>Ast. Nach.</i> vol. xxxiii. page 197.
	Long. $1^h 34^m 55^s \cdot 7$ E.	<i>Ergänzungs - Heft zu den Ast. Nach.</i> 1849, page 151.
BERLIN - - - -	Lat. $52^{\circ} 30' 16'' \cdot 7$ N.	} <i>Berliner Astron. Jahrbuch</i> , 1852, page 289.
	Long. $0^h 53^m 35^s \cdot 5$ E.	
BILK - - - -	Lat. $51^{\circ} 12' 25''$ N.	} <i>Ast. Nach.</i> vol. xxvii. page 300.
	Long. $0^h 27^m 5^s \cdot 5$ E.	
BONN - - - -	Lat. $50^{\circ} 44' 9'' \cdot 1$ N.	} <i>Ast. Nach.</i> vol. xviii. page 135.
	Long. $0^h 28^m 27^s \cdot 0$ E.	
BRESLAU - - - -	Lat. $51^{\circ} 6' 56'' \cdot 0$ N.	} <i>Berliner Astron. Jahrbuch</i> , 1852, page 289.
	Long. $1^h 8^m 10^s \cdot 0$ E.	
BRUSSELS - - - -	Lat. $50^{\circ} 51' 10'' \cdot 7$ N.	<i>Annuaire de l'Observatoire de Bruxelles, pour l'An 1837</i> , pages 264 and 265.
	Long. $0^h 17^m 28^s \cdot 90$ E.	Communicated by G. B. Airy, Esq.
BUDA - - - -	(Ofen.)	
	Lat. $47^{\circ} 29' 12'' \cdot 2$ N.	<i>Mem. Ast. Soc.</i> vol. i. page 280.
	Long. $1^h 16^m 12^s \cdot 7$ E.	<i>Zach's Correspond. Astron.</i> vol. vii. page 263.
CAMBRIDGE - - - -	Lat. $52^{\circ} 12' 51'' \cdot 8$ N.	<i>Camb. Phil. Trans.</i> vol. v. p. 279.
	Long. $0^h 0^m 23^s \cdot 54$ E.	<i>Camb. Phil. Trans.</i> vol. iii. p. 168.
CAMBRIDGE, U. S. - -	Lat. $42^{\circ} 22' 49''$ N.	} <i>Monthly Notices of the Royal Ast. Soc.</i> vol. vii. page 157.
	Long. $4^h 44^m 32^s$ W.	
CAPE OF GOOD HOPE -	Lat. $33^{\circ} 56' 3''$ S.	<i>Mem. Roy. Ast. Soc.</i> vol. vi. page 130.
	Long. $1^h 13^m 55^s \cdot 0$ E.	Communicated by Mr. Henderson.
CHRISTIANIA - - -	Lat. $59^{\circ} 54' 42'' \cdot 4$ N.	<i>Ast. Nach.</i> vol. xii. page 283.
	Long. $0^h 42^m 53^s \cdot 9$ E.	<i>Berliner Astron. Jahrbuch</i> , 1852, page 289.

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COPENHAGEN - - -	(University.) Lat. $55^{\circ} 40' 53'' \cdot 0$ N. Long. $0^h 50^m 19^s \cdot 8$ E.	<i>Ast. Nach.</i> vol. v. page 366. <i>Ast. Nach.</i> vol. xix. page 120.
CRACOW - - - -	Lat. $50^{\circ} 3' 50'' \cdot 0$ N. Long. $1^h 19^m 51^s \cdot 1$ E.	<i>Ast. Nach.</i> vol. xvi. page 256. <i>Ast. Nach.</i> vol. xvi. page 352; and vol. xviii. page 392.
DORPAT - - - -	Lat. $58^{\circ} 22' 47'' \cdot 1$ N. Long. $1^h 46^m 55^s \cdot 0$ E.	<i>Struve's Astronom. Observations</i> , vol. vi. page 60. <i>Bessel's Tabulæ Regiomontanæ</i> , page 2.
DUBLIN - - - -	Lat. $53^{\circ} 23' 13''$ N. Long. $0^h 25^m 22^s$ W.	} <i>Ast. Nach.</i> vol. x. page 274.
DURHAM - - - -	Lat. $54^{\circ} 46' 6'' \cdot 2$ N. Long. $0^h 6^m 19^s \cdot 75$ W.	
EDINBURGH - - -	Lat. $55^{\circ} 57' 23'' \cdot 2$ N. Long. $0^h 12^m 43^s \cdot 6$ W.	<i>Ast. Soc. Not.</i> vol. iii. page 201. <i>Mem. Ast. Soc.</i> vol. iv. page 568.
GENEVA - - - -	Lat. $46^{\circ} 11' 59'' \cdot 4$ N. Long. $0^h 24^m 37^s \cdot 7$ E.	<i>Mémoire sur une nouvelle détermination sur la Latitude de Genève.</i> By M. Gautier. (Genève, 1830.) <i>Ast. Nach.</i> vol. xx. page 7.
GEORGETOWN COLLEGE, D.C. (U.S.)	Lat. $38^{\circ} 54' 26'' \cdot 1$ N. Long. $5^h 8^m 18^s \cdot 15$ W.	<i>Annals of the Astronomical Observatory of Georgetown College, D.C.</i> No. I. p. 215. <i>Do. Do.</i> p. 186.
GOTHA - - - -	(Seeberg.) Lat. $50^{\circ} 56' 5''$ N. Long. $0^h 42^m 56^s \cdot 4$ E.	<i>Gauss on the Latitudes of Göttingen and Altona</i> , page 80. <i>Bessel's Tabulæ Regiomontanæ</i> , page 2.
GÖTTINGEN - - -	Lat. $51^{\circ} 31' 48''$ N. Long. $0^h 39^m 46^s \cdot 5$ E.	<i>Gauss on the Latitudes of Göttingen and Altona</i> , page 71. <i>Bessel's Tabulæ Regiomontanæ</i> , page 2.
GREENWICH - - -	Lat. $51^{\circ} 28' 38'' \cdot 2$ N. Long. $0^h 0^m 0^s$	<i>Greenwich Observations</i> , 1843, page lvii.
HAMBURGH - - -	Lat. $53^{\circ} 33' 5'' \cdot 0$ N. Long. $0^h 39^m 54^s \cdot 1$ E.	<i>Ast. Nach.</i> vol. vii. page 379. <i>Berliner Astron. Jahrbuch</i> , 1852, page 289.

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KAZAN - - - -	Lat. $55^{\circ} 47' 23'' \cdot 1$ N. Long. $3^h 16^m 26'' \cdot 3$ E.	<i>Ast. Nach.</i> vol. xxviii. page 47. <i>Conn. des Temps</i> , 1855, p. 376.
KÖNIGSBERG - - -	Lat. $54^{\circ} 42' 50'' \cdot 7$ N. Long. $1^h 22^m 0'' \cdot 5$ E.	<i>Ast. Nach.</i> vol. xxix. p. 72. <i>Bessel's Tab. Regiomontanae</i> , p. 2.
KREMSMUNSTER - -	Lat. $48^{\circ} 3' 23'' \cdot 8$ N. Long. $0^h 56^m 32'' \cdot 8$ E.	<i>Ast. Nach.</i> vol. xxxvii. page 271. <i>Ast. Nach.</i> vol. xxxvii. page 269.
LEIPSIK - - - -	Lat. $51^{\circ} 20' 20'' \cdot 1$ N. Long. $0^h 49^m 28'' \cdot 5$ E.	} <i>Berliner Astron. Jahrbuch</i> , 1852, page 289.
LEYDEN - - - -	Lat. $52^{\circ} 9' 28'' \cdot 2$ N. Long. $0^h 17^m 57'' \cdot 5$ E.	
LIVERPOOL - - - -	Lat. $53^{\circ} 24' 47'' \cdot 8$ N. Long. $0^h 12^m 0'' \cdot 11$ W.	Communicated by J. Hartnup, Esq. G. B. Airy, Esq.
MADRAS - - - -	Lat. $13^{\circ} 4' 9'' \cdot 2$ N. Long. $5^h 21^m 31'' \cdot 77$ E.	} <i>Taylor's Results of Ast. Obs. at the Observatory</i> , vol. i. 1831, pages 94 & 95. (Madras, 1832.)
MANHEIM - - - -	Lat. $49^{\circ} 29' 14''$ N. Long. $0^h 33^m 51'' \cdot 4$ E.	
MARBURG - - - -	Lat. $50^{\circ} 48' 46'' \cdot 9$ N. Long. $0^h 35^m 5'' \cdot 6$ E.	} <i>Ast. Nach.</i> vol. xx. page 27.
MARSEILLES - - - -	Lat. $43^{\circ} 17' 50'' \cdot 1$ N. Long. $0^h 21^m 29'' \cdot 0$ E.	
MILAN - - - -	(Brera.) Lat. $45^{\circ} 28' 1''$ N. Long. $0^h 36^m 47'' \cdot 2$ E.	<i>Zach's Correspond. Astron.</i> vol. i. page 193. <i>Ast. Nach.</i> vol. ii. page 398.
MODENA - - - -	Lat. $44^{\circ} 38' 53''$ N. Long. $0^h 43^m 43'' \cdot 2$ E.	} <i>Effem. Astron. di Milano</i> for 1829, pages 94 and 60.
MOSCOW - - - -	Lat. $55^{\circ} 45' 19'' \cdot 8$ N. Long. $2^h 30^m 16'' \cdot 96$ E.	
MUNICH - - - -	(Bogenhausen.) Lat. $48^{\circ} 8' 45''$ N. Long. $0^h 46^m 26'' \cdot 5$ E.	<i>Ast. Nach.</i> vol. i. page 221. <i>Ast. Nach.</i> vol. viii. page 148.
NAPLES - - - -	(Capo di Monte.) Lat. $40^{\circ} 51' 46'' \cdot 6$ N. Long. $0^h 57^m 0'' \cdot 3$ E.	<i>Ast. Nach.</i> vol. v. page 294. Communicated by M. Cacciatore to Captain B. Hall, R.N.

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NICOLEFF - - - -	Lat. $46^{\circ} 58' 20''.6$ N. Long. $2^h 7^m 55''.1$ E.	<i>Ast. Nach.</i> vol. vii. page 261. <i>Ast. Nach.</i> vol. vii. page 306.
OXFORD - - - -	Lat. $51^{\circ} 45' 36''.0$ N. Long. $0^h 5^m 2''.6$ W.	} Communicated by M. J. Johnson, Esq.
PADUA - - - -	Lat. $45^{\circ} 24' 2''$ N. Long. $0^h 47^m 29''.2$ E.	<i>Ast. Nach.</i> vol. v. page 411. <i>Ast. Nach.</i> vol. iv. page 347.
PALERMO - - - -	Lat. $38^{\circ} 6' 44''$ N. Long. $0^h 53^m 25''.6$ E.	<i>Cacciatore</i> , in Books 7 and 8 of <i>Palermo Observations</i> . Communicated by M. Cacciatore to Captain B. Hall, R.N.
PARIS - - - -	Lat. $48^{\circ} 50' 13''$ N. Long. $0^h 9^m 20''.63$ E.	<i>Conn. des Temps</i> , 1853, page 353. Communicated by G. B. Airy, Esq.
PETERSBURG - - -	(Academy of Sciences.) Lat. $59^{\circ} 56' 29''.7$ N. Long. $2^h 1^m 13''.5$ E.	} <i>Description de l'Observatoire As-</i> <i>tron. Central de Poulkova</i> , p. 292.
PORTSMOUTH - - -	Lat. $50^{\circ} 48' 3''$ N. Long. $0^h 4^m 23''.9$ W.	} <i>Requisite Tables</i> , 3rd edit. (from Trig. Survey.)
PRAGUE - - - -	Lat. $50^{\circ} 5' 18''.5$ N. Long. $0^h 57^m 41''.9$ E.	<i>Ast. Nach.</i> vol. viii. page 198. <i>Ast. Nach.</i> vol. iii. page 264.
PULKOWA - - - -	Lat. $59^{\circ} 46' 18''.7$ N. Long. $2^h 1^m 18''.66$ E.	} <i>Description de l'Observatoire As-</i> <i>tron. Central de Poulkova</i> , p. 290.
ROME - - - -	(Roman College.) Lat. $41^{\circ} 53' 52''.2$ N. Long. $0^h 49^m 54''.7$ E.	} <i>Mem. dell' Osserv. dell' Universita</i> <i>Gregoriana del Collegio Romano</i> , 1851, page 17.
ST. FERNANDO, near CADIZ - - - -	Lat. $36^{\circ} 27' 45''$ N. Long. $0^h 24^m 49''.1$ W.	<i>Zach's Corresp. Astron.</i> vol. xiv. pages 240-243. <i>Ast. Nach.</i> vol. ix. page 358.
STOCKHOLM - - - -	Lat. $59^{\circ} 20' 31''.0$ N. Long. $1^h 12^m 14''.8$ E.	<i>Conn. des Temps</i> , 1840, page 344. <i>Ast. Nach.</i> vol. xi. page 408.
TURIN - - - -	(New Observatory.) Lat. $45^{\circ} 4' 6''$ N. Long. $0^h 30^m 48''.4$ E.	Communicated by M. Plana to Captain B. Hall, R.N.
UPSALA - - - -	Lat. $59^{\circ} 51' 50''.0$ N. Long. $1^h 10^m 34''.8$ E.	<i>Conn. des Temps</i> , 1840, page 344. <i>Ast. Nach.</i> vol. xi. page 409.

LATITUDES AND LONGITUDES OF PUBLIC OBSERVATORIES.

VENICE - - - - -	Lat. $45^{\circ} 25' 49''.5$ N.	} <i>Berliner Astron. Jahrbuch</i> , 1852, page 290.
	Long. $0^h 49^m 25''.4$ E.	
VIENNA - - - - -	Lat. $48^{\circ} 12' 35''$ N.	} <i>Littrow's Astron. Observations</i> , Part viii. page 124. <i>Ast. Nach.</i> vol. iii. page 64.
	Long. $1^h 5^m 31''.9$ E.	
WARSAW - - - - -	Lat. $52^{\circ} 13' 5''.0$ N.	} <i>Additions to Conn. des Temps</i> , 1846, pages 30, 31.
	Long. $1^h 24^m 8''.5$ E.	
WASHINGTON - - - - -	(National Observatory.) Lat. $38^{\circ} 53' 38''.6$ N.	} <i>Roy. Ast. Soc. Monthly Notices</i> , vol. x. page 180.
	Long. $5^h 8^m 12''.0$ W.	
WILNA - - - - -	Lat. $54^{\circ} 41' 0''$ N.	} <i>Ast. Nach.</i> vol. iv. page 562. <i>Ast. Nach.</i> vol. viii. page 96.
	Long. $1^h 41^m 11''.9$ E.	

LATITUDES AND LONGITUDES OF PRIVATE OBSERVATORIES.

BIER CASTLE - - - (The Earl of Rosse.)	Lat. $53^{\circ} 5' 47''$ N.	} Communicated by the Earl of Rosse.
	Long. $0^h 31^m 40^s.9$ W.	
BRADSTONES - - - (W. Lassell, Esq.) (LIVERPOOL.)	Lat. $53^{\circ} 25' 28''$ N.	} Communicated by W. Lassell, Esq.
	Long. $0^h 11^m 38^s.7$ W.	
HARTWELL - - - (Dr. Lee.)	Lat. $51^{\circ} 48' 36''$ N.	} Communicated by Dr. Lee.
	Long. $0^h 3^m 24^s.33$ W.	
HAVERHILL - - - (W. W. Boreham, Esq.)	Lat. $52^{\circ} 5' 22^s.8$ N.	} Communicated by W. W. Boreham, Esq.
	Long. $0^h 1^m 46^s.4$ E.	
KENSINGTON - - - (Sir James South.)	Lat. $51^{\circ} 30' 11^s.6$ N.	} Communicated by Sir James South.
	Long. $0^h 0^m 46^s.8$ W.	
MARKREE - - - (E. J. Cooper, Esq.)	Lat. $54^{\circ} 10' 36''$ N.	} Communicated by E. J. Cooper, Esq.
	Long. $0^h 33^m 48^s.4$ W.	
OLMÜTZ - - - (Herr v. Unkrechtsberg.)	Lat. $49^{\circ} 35' 40''$ N.	} <i>Ast. Nach.</i> vol. xxxvii. page 77.
	Long. $1^h 9^m 0^s.1$ E.	
REDHILL - - - (R. C. Carrington, Esq.)	Lat. $51^{\circ} 14' 25^s.3$ N.	} Communicated by R. C. Carrington, Esq.
	Long. $0^h 0^m 41^s.25$ W.	
REGENT'S PARK - - (George Bishop, Esq.)	Lat. $51^{\circ} 31' 29^s.9$ N.	} Communicated by George Bishop, Esq.
	Long. $0^h 0^m 37^s.1$ W.	
SENFTENBERG - - - (Baron v. Senftenberg.)	Lat. $50^{\circ} 5' 10''$ N.	} <i>Ast. Nach.</i> vol. xxxi. page 173.
	Long. $1^h 5^m 50^s.5$ E.	
STONE (AYLESBURY) - (Rev. J. B. Reade.)	Lat. $51^{\circ} 47' 57^s.0$ N.	} Communicated by the Rev. J. B. Reade.
	Long. $0^h 3^m 29^s.09$ W.	

LATITUDES AND LONGITUDES OF PRIVATE OBSERVATORIES.

TARN BANK	- -	(Isaac Fletcher, Esq.)	} Communicated by Isaac Fletcher, Esq.
		Lat. $54^{\circ} 39' 13'' \cdot 7$ N. Long. $0^h 13^m 44^s \cdot 52$ W.	
WATERINGBURY	- -	(Rev. W. R. Dawes.)	} Communicated by the Rev. W. R. Dawes.
		Lat. $51^{\circ} 15' 12''$ N. Long. $0^h 1^m 39^s \cdot 8$ E.	
WROTTESLEY HALL	-	(Lord Wrottesley.)	} Communicated by Lord Wrottesley.
		Lat. $52^{\circ} 37' 2'' \cdot 3$ N. Long. $0^h 8^m 53^s \cdot 57$ W.	

EXPLANATION OF THE ARTICLES

CONTAINED IN

THE NAUTICAL ALMANAC AND ASTRONOMICAL EPHEMERIS

FOR THE YEAR 1859.

ALL the articles of the Ephemeris have been computed for Greenwich MEAN solar time ; and where they are given for apparent solar or sidereal time, it has been chiefly for the convenience of astronomers. A *day* is the interval of time between the departure of any meridian from a heavenly body and its succeeding return to it, and derives its name from the body with which the motion of the meridian is compared. The interval between the departure and return of a meridian to the Sun is called a *solar* day ; in the case of the Moon, the interval is called a *lunar* day ; and in that of a Star, a *sidereal* day. The revolution of the Earth on its axis is always performed in the same time ; and if the heavenly bodies preserved the same positions with respect to each other, the intervals between the departure and return of a meridian to each would be the same, and all days, consequently, of equal length. The Sun, (or more strictly, the Earth in its orbit,) the Moon, and the Planets are, however, in continual motion ; and with velocities not only different from each other, but varying in each particular body : the length of a day, as determined by any of these bodies, is therefore a variable quantity.

Astronomers, with a view of obtaining a convenient and uniform measure of time, have recourse to a *mean solar day*, the length of which is equal to the mean or average of all the apparent solar days in a year. An imaginary Sun, called the *mean* Sun, is conceived to move uniformly in the Equator with the real Sun's *mean* motion in Right Ascension, and the interval between the departure of any meridian from the *mean* Sun and its succeeding return to it is the duration of the mean solar day. Clocks and chronometers are adjusted to mean solar time ; so that a complete revolution (through 24 hours) of the hour hand of one of these machines should be performed in exactly the same interval as the revolution of the Earth on its axis with respect to the mean Sun. If the mean Sun could be observed on the meridian at the instant that the clock or chronometer indicated $0^h\ 0^m\ 0^s$, it would again be observed there when the hour hand returned to the same position. As the time deduced from observation of the *true* Sun is called *true* or *apparent* time, so the time deduced from the *mean* Sun, or indicated by the machines which represent its motion, is denominated *mean* time.

We cannot *immediately* obtain mean time from observation ; but, from an observation of the true Sun, with the aid of the equation of time, which is the angular distance in time between the mean and the true Sun, we may readily deduce it. Suppose the true Sun to be observed on the meridian of Greenwich, Jan. 1, 1859 ; it would then be apparent noon at that meridian ; the equation of time at this instant is $3^m\ 43^s\ 84$, and, by the precept at the head of the column, it is "*to be added to*

apparent time"; hence it appears that the corresponding mean time is $0^h 3^m 43^s \cdot 84$, or that the mean Sun had passed the meridian previously to the true Sun, and that at the instant of observation the mean time clock or chronometer ought to indicate this time.

A mere inspection of the columns of the Ephemeris is, of itself, sufficient to show that the quantities are continually varying, and that some reduction is necessary where data are to be obtained for any time differing from that for which the quantities are registered. Take, for instance, the Sun's Right Ascension on Page II. of the month of January; on January 1, it is $18^h 46^m 9^s \cdot 66$; on January 2, it is $18^h 50^m 34^s \cdot 59$; in the course of 24 mean hours it has therefore increased by $4^m 24^s \cdot 93$. If, then, the Right Ascension were required for any time between the Mean Noons of January 1 and 2, as at 6^h from Mean Noon of January 1, it would be necessary to increase the Right Ascension on January 1, by the proportional part of the daily increase due for the 6^h , viz. by one-fourth part, or $1^m 6^s \cdot 23$. This would in all cases be required, even under the meridian of Greenwich, for which the quantities have been specially computed. Let a person be now supposed to be under a meridian 15° West of Greenwich. The positions of the heavenly bodies, as referred to the centre of the Earth, are independent of meridians, and are the same for all places at the same absolute instant; but the relative times at Greenwich and the assumed meridian would be different. If it were 1^h from mean noon at the one place, it could not be 1^h from mean noon at the other; for when we speak of time, we mean, as regards a visible phenomenon, the distance of the Sun *westward* from a given meridian, and at the same absolute moment of time the Sun *cannot* be at the same distance (*reckoning westward*) from two meridians which are 15° distant from each other. Before we can make use of the Ephemeris, it is therefore necessary to ascertain, in every instance, the distance of the Sun (*in time*) from the meridian of Greenwich, or what is commonly called the corresponding Greenwich time; and this is evidently equal to the given time under the assumed meridian, *increased or diminished* by the difference (*in time*) of the two meridians, according as the assumed meridian is to the *Westward* or *Eastward* of Greenwich. In a mean solar day or 24 mean solar hours, the Earth, by its rotation from West to East, has caused every meridian in succession from East to West to pass the mean Sun; and since the motion is uniform, all the meridians distant from each other 15° will have passed the mean Sun, at intervals of one mean hour; the meridian to the Eastward passing first, or being, as compared with the Sun, always one mean hour in advance of the Westerly meridian. When it is 6^h from mean noon at a place 15° West of Greenwich, it is therefore 7^h from mean noon at Greenwich; and it is for this Greenwich time that we must deduce the quantities required from the Ephemeris.

If a chronometer adjusted to Greenwich mean time be at hand, the Greenwich time may be immediately obtained by applying a correction, deduced from the daily rate and interval elapsed, and this will be preferable in all cases for obtaining the requisite data from the Ephemeris.

The day adopted in this Ephemeris is supposed to begin at mean noon, or at the instant when a clock or chronometer shows $0^h 0^m 0^s$, Greenwich mean time, and is continued through the 24 hours, to the following mean noon, when another day begins. It may therefore be called the *mean astronomical day*, although, in practice, astronomers begin the day at the moment the true Sun's centre is on their meridian.

In the civil, or common, method of reckoning, the day is supposed to commence at the *preceding* midnight, and to be counted only to 12 hours or noon, when the 12 hours are reckoned over again to the next midnight. The civil reckoning is therefore always

12^h in advance of the astronomical reckoning : and the civil time corresponding to any given astronomical time is hence readily found by *adding* 12^h to the latter : thus, if to Jan. 1^d 7^h 49^m, astronomical time, be added 12^h, the sum will be Jan. 1^d 19^h 49^m, or Jan. 1^d 7^h 49^m P.M. civil time. Again, to Jan. 1^d 15^h 35^m, astronomical time, add 12^h ; the sum will be Jan. 2^d 3^h 35^m A.M. civil time. It thus appears that, from noon to midnight, the day of the month and the hour of the day are the same in both methods ; but from midnight to noon they differ ; for at midnight, when a new civil day commences, the astronomical day wants 12^h of its completion.

The conversion of civil into astronomical time, is, on the contrary, performed by *diminishing* the former by 12^h. Thus, January 2^d 3^h 35^m A.M. civil time, diminished by 12^h, leaves January 1^d 15^h 35^m for the corresponding astronomical time.

To each month there are devoted twenty pages, distinguished by the Roman numerals I. to XX.

For convenience of interpolation, the quantities that follow next in order of succession have been added at the bottom of each page. Thus the quantities opposite to February 1 will be found inserted also opposite to January 32, the number of the days in each month having been intentionally increased for such purpose.

Page I. of each Month.

The contents of this page are adapted to *apparent noon*, or the instant when the Sun's centre is on the meridian of Greenwich. The *Sun's Right Ascension*, here given, is *affected with aberration*, and reckoned from the true equinox ; it is therefore the sidereal time at apparent noon, or the time which ought to be shown by a sidereal clock, at that instant. The *Sun's Apparent Declination* is the angular distance of the Sun from the equator, measured on the meridian.

The columns entitled "Diff. for 1 hour" are intended to facilitate the reduction of the quantities from apparent noon to any other time. The values of these quantities for any proposed *mean* time will, however, be more accurately ascertained by means of the numbers on page II. from which, indeed, they have been derived.

The *Sidereal Time of the Sun's Semidiameter passing the Meridian* is useful for reducing a transit observation of either limb of the Sun, when one only has been observed, to the transit of the centre.

The *Equation of Time* is the difference between apparent and mean time, and therefore serves for the conversion of either time into the other. The numbers here given, show, for Greenwich apparent noon, the distance of the mean Sun from the meridian, or the portion of time to be *added to* or *subtracted from*, (according to the precept at the head of the column,) Greenwich apparent noon to obtain the corresponding mean time at the same meridian, or the time which ought to be shown by the mean time clock. It differs from the equation of time on page II., because the equation itself varies in the interval between apparent and mean noon.

Where time is deduced from observations of the Sun, the *immediate* result is *apparent* time ; to convert it into mean time, the equation of time is necessary, and it is to be applied to apparent time, according to the precept at the head of the column.

Thus, suppose the apparent time deduced from an observation of the Sun on January 16, 1859, in longitude 45° or 3^h East of Greenwich, to be 6^h, and it were required to convert it into mean time ; subtracting the difference of longitude 3^h from the apparent time at the place, we have 3^h for the corresponding apparent time at

Greenwich. The difference of the equation for 1 hour is $0^{\circ} 840$, which, multiplied by 3, gives $2^{\circ} 520$ for the variation in 3 hours, and this being added (because the equation is increasing) to $9^{\text{m}} 59^{\circ} 24$, the equation of time at apparent noon, the result is $10^{\text{m}} 1^{\circ} 76$, to be added (according to the precept at the head of the column) to the given apparent time 6^{h} , whence we obtain $6^{\text{h}} 10^{\text{m}} 1^{\circ} 76$ for the mean time required.

At page I. of the month of April, we observe, at the head of the column ^{added to} _{subt. from}, which signifies that a change of precept occurs in the course of the month; and between the equations opposite to the 15th and 16th days of the month, a black line, indicating that the change occurs between the apparent noons of those days. The upper precept applies to all the quantities above the black line; and the lower precept to all the quantities below it: that is, in the instance referred to, the equation of time is to be *added to* apparent time from the 1st of April to the instant at which the equation becomes $0^{\text{m}} 0^{\circ}$, which happens between the noons of the 15th and 16th days of the month; but after that instant the equation is to be *subtracted* from apparent to obtain mean time.

Page II. of each Month.

The *Sun's Apparent Right Ascension* and *Declination* at mean noon have been deduced from its *apparent* Longitude and Latitude given at page III., and the *apparent* obliquity of the ecliptic at page 242. They denote the *apparent* position of the true Sun with reference to the equator, and the true equinox, at the instant the Greenwich mean time clock, or chronometer, indicates $0^{\text{h}} 0^{\text{m}} 0^{\circ}$, or when the hour angle of the true Sun is equal to the equation of time.

To find the Right Ascension and Declination for any other mean time and place, as at $9^{\text{h}} 20^{\text{m}}$ A.M. March 2, 1859, in longitude 98° , or $6^{\text{h}} 32^{\text{m}}$ West of Greenwich. The astronomical time, corresponding to $9^{\text{h}} 20^{\text{m}}$ A.M. March 2, is $21^{\text{h}} 20^{\text{m}}$ from the noon of March 1, or March $1^{\text{d}} 21^{\text{h}} 20^{\text{m}}$, agreeably to what has been said before. The longitude, being West of Greenwich, must be added to March $1^{\text{d}} 21^{\text{h}} 20^{\text{m}}$, and the result, March $2^{\text{d}} 3^{\text{h}} 52^{\text{m}}$, is the corresponding Greenwich mean time, for which the Right Ascension and Declination are to be found. The difference between the Right Ascensions on March 2, and March 3, is $3^{\text{m}} 44^{\circ} 09$, that is, in the 24 mean hours succeeding the mean noon of March 2, the Right Ascension has increased by this quantity; it will, therefore, have received a proportional part of the increase in $3^{\text{h}} 52^{\text{m}}$, and the amount is readily obtained by this proportion $24^{\text{h}} : 3^{\text{m}} 44^{\circ} 09 :: 3^{\text{h}} 52^{\text{m}} : 36^{\circ} 10$; which, being *added to* $22^{\text{h}} 51^{\text{m}} 25^{\circ} 34$, the Right Ascension at mean noon of March 2, gives $22^{\text{h}} 52^{\text{m}} 1^{\circ} 44$, for the Right Ascension at the time proposed.

In a similar manner the Declinations indicate a decrease of $22' 56'' 2$ in the 24 hours; therefore $24^{\text{h}} : 22' 56'' 2 :: 3^{\text{h}} 52^{\text{m}} : 3' 41'' 7$, the proportional part of the decrease for $3^{\text{h}} 52^{\text{m}}$, which, *subtracted* from S. $7^{\circ} 17' 24'' 7$ leaves S. $7^{\circ} 13' 43'' 0$ for the Declination required.

The *Semidiameter of the Sun*. The numbers in this column express the angle at the centre of the earth subtended by the Sun's semidiameter, and are required for reducing observations of the limb to the centre, as in the instance of measuring the altitude of the Sun's upper or lower limb, or the distance of the Moon from the Sun.

Equation of Time. The numbers in this column are the values of the equation at the instant of mean noon, and therefore serve more particularly to convert *mean* into *apparent* time; for which purpose we have only to apply the equation according to the precept at the head of the column. Thus, if from mean noon of April 2, or

0^h , be subtracted the equation $3^m 44^s \cdot 64$; April $1^d 23^h 56^m 15^s \cdot 36$ is the corresponding apparent time. To find the equation of time at 4^h A.M. mean time on April 16, 1859, in longitude 90° , or $6^h 0^m$, West of Greenwich. Add the difference of longitude to the given time, because it is West, and the corresponding astronomical mean time at Greenwich is April $15^d 22^h 0^m$. The variation in 24 hours is $14^s \cdot 90$, that is, the *sum* of the equations belonging to the noons of the 15th and 16th, because the equation has decreased to 0 and then increased in the interval, therefore

$$24^h : 14^s \cdot 90 :: 22^h 0^m : 13^s \cdot 66,$$

which, being greater than $0^m 6^s \cdot 32$, the equation on the 15th, which was decreasing, shows that in the $22^h 0^m$ the equation has passed through its state of decrease to zero, or 0, and is now increasing. The difference $7^s \cdot 34$ is the equation of time at the time proposed, and is to be added to mean time, because it has passed the zero.

Sidereal Time at Mean Noon is the angular distance of the first point of Aries, or the true vernal equinox, from the meridian, at the instant of mean noon: it is therefore the Right Ascension of the mean Sun, or the time which ought to be shown by a sidereal clock at Greenwich, when the mean time clock indicates $0^h 0^m 0^s$.

A sidereal clock represents the rotation of the Earth on its axis, as referred to the stars, its hour-hand performing a complete revolution through the 24 hours in the interval between the departure of any meridian from a star and its next return to it. At the moment that the vernal equinox, or a star whose Right Ascension is $0^h 0^m 0^s$, is on the meridian of Greenwich, the sidereal clock ought to show $0^h 0^m 0^s$, and at the succeeding return of the star, or the equinox, to the same meridian, the clock ought to indicate the same time.

The sidereal time here given is that in common use among astronomers, and expresses the actual hour-angle from the meridian, westward, of the true equinoctial point at the moment of observation. It is therefore affected by the equation of the equinoxes; and is not, strictly speaking, a *mean* or uniformly increasing quantity. It ought, therefore, to be termed *apparent sidereal time* in the same manner as apparent solar time reckons from the actual arrival of the sun's centre on the meridian; and in like manner, as mean solar time is reckoned from the arrival of an imaginary sun, moving uniformly with its mean velocity, so *mean sidereal time* (whose expression would be simply $\frac{\odot's \text{ mean longitude}}{15}$) would be reckoned from the transit of, not the

true, but the *mean* equinoctial point. The smallness of the fluctuations to which a clock, regulated to *apparent* sidereal time compared with one regulated to *mean* sidereal time, is subject, being at the utmost only $2^s \cdot 3$ in a period of nineteen years, has prevented the practical inconvenience of this from being felt: no clock being sufficiently perfect to go during so long a period without frequent re-adjusting; and as the corrections applied by astronomers to the observed right ascensions of all objects are adapted to this supposed irregularity in the rate of the clock, the mean right ascensions thence deduced come out correct. It has, therefore, not been thought necessary, in this instance, to depart from received usage, however theoretically objectionable such a mode of counting time may appear, since a change in this respect would involve the necessity of a corresponding change in all tables of nutation.

The sidereal time at mean noon is useful in all cases where mean solar time is to be deduced from observations of the heavenly bodies. It serves to facilitate the reduction of sidereal to mean solar time, and *vice versa*, by the help of the tables commonly used for that purpose called a Table of Acceleration of Sidereal on Mean

solar time, and the corresponding Table of Retardation of Mean on Sidereal time, according to the following rule:—Convert the interval from the mean noon immediately preceding, from the denomination given, to that required; and if mean time be required, the result will at once be that which the clock should show; but if sidereal time be that sought, the result must be added to the sidereal time at the preceding mean noon.

Example:—To convert $21^{\text{h}} 9^{\text{m}} 24^{\text{s}}.04$ sidereal time, January 2, 1859, into mean solar time, for the meridian of Greenwich.

	h	m	s
Sidereal time given - - - - -	21	9	24.04
Sidereal time at mean noon, January 2 - - - - -	18	46	22.45
<hr/>			
Interval in sidereal time from mean noon - - - - -	2	23	1.59
Retardation of mean on sidereal time for the interval	-	23	.43
<hr/>			

Mean solar time required - - - - - 2 22 38.16

which is the interval elapsed since mean noon, expressed in mean time; and therefore the time which ought to be shown by a mean time clock.

Vice versa, to convert $2^{\text{h}} 22^{\text{m}} 38^{\text{s}}.16$ mean solar time, January 2, 1859, into sidereal time for the same meridian.

	h	m	s
Mean interval from mean noon, January 2 - - - - -	2	22	38.16
Acceleration of sidereal on mean time for the interval	+	23	.43
<hr/>			
Sidereal interval from mean noon - - - - -	2	23	1.59
Sidereal time at mean noon, January 2 - - - - -	18	46	22.45
<hr/>			

Sidereal time required - - - - - 21 9 24.04

which ought to be the time shown by the sidereal clock at the instant in question.

If the place of observation be not on the meridian of Greenwich, the sidereal time must be corrected by the *addition* of $9^{\text{s}}.8565$ for each hour (and proportional parts for the minutes and seconds) of longitude, if the place be to the west of Greenwich; but by its *subtraction*, if to the east. Thus in $9^{\text{h}} 10^{\text{m}} 6^{\text{s}}$ west longitude, the sidereal time at mean noon, January 2, instead of being, as in the foregoing Example, $18^{\text{h}} 46^{\text{m}} 22^{\text{s}}.45$, must be corrected by adding $1^{\text{m}} 30^{\text{s}}.37$, thus giving $18^{\text{h}} 47^{\text{m}} 52^{\text{s}}.82$ for the time to be used, instead of that set down in the column.

The conversion of mean solar to sidereal time, and *vice versa*, may, however, be performed, and with perhaps less liability to error, by means of this and of the column entitled *Mean Time of Transit of the First point of Aries*, at page XX. of each month, using the Tables of Time Equivalents, inserted at pages 520 to 523.

To convert mean solar into sidereal time: To the sidereal time at the *preceding* mean noon add the sidereal interval corresponding to the given mean time; the sum will be the sidereal time required. (See Example at page 521.)

To convert sidereal into mean solar time: To the mean time at the *preceding* sidereal noon, add the mean interval corresponding to the given sidereal time; the sum will be the mean solar time required. (See Example at page 523.)

In this mode of reduction there is not, as in the former, by means of the Tables of Acceleration and Retardation, any distinction of cases, all the quantities being additive.

The Tables of Time Equivalents differ from the Tables of Acceleration and Retardation, in containing the *values* of intervals of each species of time, expressed in

terms of the other, instead of the *corrections*, respecting the proper application of which, a difficulty is sometimes felt by unpractised computers.

Sidereal time at mean noon is also used in finding the mean time of transit of a heavenly body.

Page III. of each Month.

The *Sun's Longitude*, here given, is *affected with aberration*, and reckoned from the *true* equinox : it is therefore the apparent longitude of the Sun at the instant of mean noon ; or it is (if R denote the Radius Vector) the *true* Longitude of the Sun at the time $0^h - 497^m \cdot 78 R$, because aberration causes the Sun to appear behind its true place in the Ecliptic.

The *Sun's Latitude* is the angular distance of the Sun's centre from the plane of the Ecliptic, measured on a circle perpendicular to that plane.

The *Logarithm of the Radius Vector of the Earth* is the logarithm of the distance between the centre of the Earth and the *apparent* place of the centre of the Sun at mean noon, the mean distance, or the semi-axis major of the orbit, being considered unity.

These quantities are derived *immediately* from the Solar tables, and enter into, indeed are the foundation of, nearly all the subsequent operations in the Ephemeris. Whenever the *true* Longitude of the Earth is required, as in calculating the Geocentric position of a Planet or Comet from its Heliocentric position, it is necessary to reduce the *apparent* Longitude of the Sun to the *true*, by correcting it for aberration. The Sun's aberration for every tenth day is given at page 242, and may thence be readily obtained for any other day of the year. (See *Sun's aberration*, page 547).

The Sun's Longitude, entering into the expressions for aberration and solar nutation, is required for the reduction of the stars' places.

The *Moon's Semidiameter* is the angle under which her Semidiameter would appear if viewed from the centre of the Earth ; and her *Horizontal Parallax* is the *greatest* angle under which the Earth's equatorial semidiameter would appear if seen from the centre of the Moon. The former is requisite to obtain the position of the centre from an observation of the Moon's *limb*, as in all cases of altitudes or lunar distances. The latter, for computing the horizontal parallax of the Moon at any given latitude on the Earth, *considered as a spheroid* ; also for finding the parallax in altitude, Right Ascension, &c., for the purpose of reducing an observation of the Moon made on the surface of the Earth, to what it would be if made at the centre.

In reducing observations of the Moon made at sea, the horizontal *equatorial* parallax is generally used for finding the parallax in altitude, without regarding the previous reduction to the spheroid ; but in calculations requiring considerable precision, as in lunar occultations and solar eclipses, this reduction cannot be dispensed with.

Example. To find the Moon's semidiameter and horizontal parallax at 6^h A.M. February 23, 1859, at a place 15°, or 1^h to the East of Greenwich. The civil time at the place expressed in mean astronomical time, is February 22^d 18^h, from which subtracting 1^h, because the place is to the East of Greenwich, we have February 22^d 17^h for the corresponding time at Greenwich, or 5^h after midnight. Proceeding from the semidiameter given for midnight of the 22nd, we must compute the proportional part of the variation in 12 hours due to the time elapsed since midnight, viz. 5^h ; and for ordinary purposes at sea, it will suffice simply to take this propor-

tional part for the correction of the registered value preceding the given time; thus the semidiameter for midnight, or 12^h , of the 22nd, is $15' 21'' \cdot 2$, and for the 23rd at noon, or 24^h , it is $15' 14'' \cdot 8$; the difference $6'' \cdot 4$ is the variation in 12 hours. Therefore,

$$12^h : 6'' \cdot 4 :: 5^h : 2'' \cdot 7,$$

which *subtracted* (because the quantities are decreasing) from $15' 21'' \cdot 2$, gives $15' 18'' \cdot 5$ for the Moon's semidiameter at the time proposed. Similarly the horizontal parallax at midnight of the 22nd is $56' 13'' \cdot 0$; and at noon of the 23rd it is $55' 49'' \cdot 6$; the difference $23'' \cdot 4$ is the variation in the 12 hours which include the given time; therefore, $12^h : 23'' \cdot 4 :: 5^h : 9'' \cdot 8$, which *subtracted* (because the quantities are decreasing) from $56' 13'' \cdot 0$ gives $56' 3'' \cdot 2$ for the Horizontal parallax required. If greater accuracy be desired, a further correction must be applied to the values just obtained, on account of second differences, to compensate the error produced by supposing the first differences uniform. But the *greatest* error in the semidiameter which can arise by this supposition in the present instance is not one-tenth of a second; for, select four semidiameters from the Ephemeris, two preceding, and two following the given time, and take the first and second differences thus:—

February 22,	^h 0	['] 15	^{''} 28·1	—	^{''} 6·9	
	12	15	21·2	—	6·4	+ 0·5
23,	0	15	14·8	—	5·8	+ 0·6
	12	15	9·0			

The mean of the second differences is $0'' \cdot 55$ and $\frac{1}{2}$ of this, which is the *greatest* effect, is only $0'' \cdot 07$.

A similar operation performed on the parallaxes will show the error that would arise on the supposition of uniform or equal first differences, to be two-tenths of a second.

Page IV. of each Month.

The *Moon's Longitude and Latitude* at mean noon and midnight indicate the position of the Moon at these respective times, referred to the Ecliptic and the true equinox, as it would be seen from the centre of the Earth. They are the results deduced immediately from the lunar tables, and are the foundation of all subsequent calculations in which the Moon is concerned. These quantities are now of little use to the seaman, as the position of the Moon, with respect to the Equator, is given for every hour in the succeeding pages; but the Moon's Longitude is involved in the formulæ for nutation, and is therefore necessary for its determination. In finding the Moon's Longitude and Latitude for any other times than those of mean noon and midnight, it is necessary to apply the equation of second, and sometimes even of third and fourth differences, on account of the irregular variation of her motion.

The *Moon's Age* at mean noon is the mean time elapsed since the Moon's ecliptic conjunction with the Sun, or since the Sun and Moon had the same Longitude. The numbers in this column represent her age at Greenwich, and are expressed in days, and decimal parts of a day.

The *Moon's Meridian Passage*.—This column contains the Greenwich mean time to the nearest tenth of a minute, at which the Moon's centre is on the *upper* meridian of Greenwich, and is useful to indicate when the Latitude may be obtained from an observed meridian altitude of the Moon; also, in conjunction with a Table of semi-

diurnal Arcs, to determine approximately the times of the rising and setting of the Moon : it is likewise useful in finding the time of High Water.

When the symbol (δ) denoting conjunction occurs, as on February 2, we are to understand that the Moon does *not* pass the *upper* meridian on that day at Greenwich. This is the case once in every lunation, and arises from the circumstance of the lunar day being greater than the mean solar day, and including it within its limits. In the present instance, the excess is $0^h 44^m \cdot 2$, or the lunar day is equal to $24^h 44^m \cdot 2$ mean solar time ; the Moon passes the meridian on the 1st at $23^h 51^m \cdot 9$, or $8^m \cdot 1$ *previously* to the noon of the 2d, and does not return to the same meridian until $0^h 36^m \cdot 1$ *after* the noon of the 3d. For the same reason there is also one day in every lunation on which the Moon does not transit the *lower* meridian, and this happens about the time of opposition, or when the difference of longitude of the Sun and Moon is 180° . In the list of Moon-culminating stars, at pages 424 to 462, the days on which only one transit occurs are readily seen. On February 2d (page 427), for instance, it appears that the Moon transits the *lower* meridian only, while on the 16th (page 428), the only transit is that at the *upper* meridian.

To find the Mean Time of Transit under any other meridian, suppose 45° or 3^h West of Greenwich, on January 15, 1859. The meridian being to the West of Greenwich, the transit will take place *after* the Greenwich time of transit on the 15th ; therefore take the difference between the meridian passages on the 15th and 16th, which is $1^h 6^m \cdot 0$. Then $24^h : 1^h 6^m \cdot 0 :: 3^h : 8^m \cdot 3$, which *added* to the Greenwich mean time of transit gives $9^h 4^m \cdot 8$ for the mean time of transit at the given meridian. Had the assumed meridian been 3^h to the East of Greenwich, the transit would have taken place *before* the transit at Greenwich, and the proportional part of the difference between the 14th and 15th, must in this case have been *subtracted*. The times thus deduced are only approximate ; but they are sufficiently accurate for the purposes usually required.

Pages V. to XII. of each Month.

The *Moon's Right Ascension and Declination* for every hour of the day, with the *Difference of Declination* for 10 minutes. By means of the quantities here given, the Latitude, Time, Azimuth, Moon's rising and setting, &c., may be deduced, with nearly as little labour as is required in the case of the Sun. The numbers represent the position of the Moon, as it would appear from the centre of the Earth, with respect to the equator and the true equinox ; and they are given for every hour, with the view of rendering any correction for second differences unnecessary, except where extreme precision is required. The Right Ascension for any time is readily obtained by simply adding the proportional part of the hourly variation due to the interval elapsed since the preceding hour. Thus, suppose the Right Ascension of the Moon were required at $8^h 45^m$ mean time on January 12, in longitude 60° , or 4^h east of Greenwich. The given time, $8^h 45^m$, diminished by 4^h , gives the corresponding Greenwich time $4^h 45^m$. The Right Ascension at 4^h is $1^h 31^m 19^s \cdot 34$, and at 5^h it is $1^h 33^m 23^s \cdot 85$; the difference $2^m 4^s \cdot 51$, is the increase in the interval, or 60^m . Hence, $60^m : 2^m 4^s \cdot 51 :: 45^m : 1^m 33^s \cdot 38$, which being added to the Right Ascension at 4^h , gives $1^h 32^m 52^s \cdot 72$ for the Right Ascension at $4^h 45^m$ at Greenwich, or at $8^h 45^m$ under the proposed meridian. To find the Declination, we make use of the numbers in the column headed "Diff. Dec. for 10". The number in this column standing opposite to any hour is $\frac{1}{4}$ of the difference of the Declinations at that and the following hour. We therefore say, $10^m : 136'' \cdot 82 :: 45^m : 10' 15'' \cdot 7$, which being

added (because the Declinations are increasing) to N. $14^{\circ} 12' 50'' \cdot 5$, the Declination at 4^h, gives N. $14^{\circ} 23' 6'' \cdot 2$, for the Declination at the time proposed.

The *Phases of the Moon*. These are given at page XII. to the nearest tenth of a minute. The numbers denote the Greenwich mean time, at which the difference of Longitude between the Sun and the Moon is 0° , 90° , 180° , or 270° , being

0° at the New Moon,
 90° at the First Quarter,
 180° at the Full Moon,
 270° at the Last Quarter.

The Moon's *Apogee and Perigee*. The numbers here given indicate, to the nearest hour, the Greenwich mean time at which the Moon is respectively at her greatest and least distance from the Earth.

Pages XIII. to XVIII. of each Month.

Lunar Distances.—These pages contain, for every third hour of Greenwich mean time, the angular distances between the apparent *centres* of the Moon and certain heavenly bodies, such as they would appear to an observer at the centre of the Earth. When a Lunar Distance has been observed on the surface of the Earth, and reduced to the centre, by clearing it of the effects of parallax and refraction, the numbers in these pages enable us to ascertain the exact Greenwich mean time at which the objects would have the same distance. They are arranged, from *west to east*, commencing each day with the object which is at the greatest distance *westward* of the Moon, in the precise order in which they appear in the heavens; W. indicating that the object is west, and E. east of the Moon. Thus we have at one view, by a simple reference to the date, all the lunar distances which are available for the determination of the Longitude.

The columns headed "P.L. of diff." contain the proportional logarithms of the differences of the distances at intervals of three hours, which are used in finding the Greenwich time corresponding to a given distance, according to the following rule, viz: For the given day, seek in the Ephemeris for the *nearest* distance *preceding*, in order of time, the given distance, and take the difference between it and the given distance; from the proportional logarithm of this difference subtract the proportional logarithm standing opposite to the said *nearest* distance in the Ephemeris; the remainder will be the proportional logarithm of a portion of time to be added to the hour answering to the *nearest* distance, to obtain the approximate Greenwich mean time corresponding to the given distance.

If the distance between the Moon and a Star increased or decreased uniformly, the Greenwich times corresponding to a given distance, as found by the above rule, would be strictly correct; but an inspection of the columns of the proportional logarithms in the Ephemeris will show that this is not the case; and as the knowledge of the exact Greenwich time is desirable, a correction must be applied to the time so found for the variation of the differences of the distances. This correction may be obtained by means of the Table at page 516 of the present volume, in the following manner:

1. Find the approximate interval by the preceding rule.
2. Take the difference between the proportional logarithms standing opposite to the distances in the Ephemeris which include the given distance.
3. With the approximate interval and this difference, as arguments, take out the correction from the table.

4. If the proportional logarithms are *decreasing*, add the correction to the approximate time; but if *increasing*, subtract it: the result will be the accurate Greenwich mean time.

Example I.—Suppose it were required to find the Greenwich mean time, at which the *reduced* distance between the Moon and α Pegasi would be $35^{\circ} 57' 58''$ on January 12, 1859. It appears, by inspecting the distances, that the time must be between *Noon* and III^{h} : the *nearest* distance *preceding*, in order of time, the given distance is therefore the

Distance at <i>Noon</i>	-	35 15 44	and P.L.	- -	3253
<i>Reduced</i> Distance	-	35 57 58			
		<hr/>			
Difference	- -	0 42 14	- - P.L.	- -	6296
		<hr/>			
Approximate Interval	$1^{\text{h}} 29^{\text{m}} 19^{\text{s}}$	- P.L.	- -		<hr/> 3043

The difference between the proportional logarithms in the Ephemeris, at *Noon*, and III^{h} , is 66. Opposite to $1^{\text{h}} 29^{\text{m}} 19^{\text{s}}$ (or the quantity nearest to it, $1^{\text{h}} 30^{\text{m}}$), and under 66, in the table, we have for the correction 21^{s} , which, *added* to the approximate interval, $1^{\text{h}} 29^{\text{m}} 19^{\text{s}}$, because the proportional logarithms are *decreasing*, gives $1^{\text{h}} 29^{\text{m}} 40^{\text{s}}$, for the true interval from *Noon*: and hence the Greenwich mean time is $1^{\text{h}} 29^{\text{m}} 40^{\text{s}}$.

We see that, in the preceding Example, the omission of this correction would only produce an error of $5' 25''$ in the Longitude. Cases may however occur, in which it would be greater.

It will sometimes happen, that the difference of the proportional logarithms will exceed 138, the limit of the table of correction; in this case the table may be entered with the approximate interval, and *one-half or any fraction* of the difference of the proportional logarithms and the corresponding correction *increased in like proportion*.

Example II.—Suppose it were required to find the Greenwich mean time, at which the *reduced* distance between the Moon and Fomalhaut would be $29^{\circ} 0' 57''$ on March 28, 1859. By inspecting the distances, it appears that the time must be between XVIII^{h} and XXI^{h} ; therefore take the

Distance at XVIII^{h}	-	29 30 33	and P.L.	- -	4832
<i>Reduced</i> Distance	-	29 0 57			
		<hr/>			
Difference	- -	0 29 36	- - P.L.	- -	7840
		<hr/>			
Approximate Interval	$1^{\text{h}} 30^{\text{m}} 3^{\text{s}}$	- P.L.	- -		<hr/> 3008

The difference between the proportional logarithms in the Ephemeris, at XVIII^{h} and XXI^{h} , is 180, one-half of which is 90; under this number in the table, and opposite that nearest the approximate interval, is 28^{s} : the correction is therefore 56^{s} to be *subtracted* from the approximate interval, because the proportional logarithms are *increasing*; the time at Greenwich is therefore $19^{\text{h}} 29^{\text{m}} 7^{\text{s}}$.

The omission of the correction in the preceding example would produce an error of $14' 0''$ in Longitude; it may, however, be considered as an extreme case, and such as will seldom be met with.

The proportional logarithms also serve to point out the star which is most favourably circumstanced for accurate observation ; that star being to be preferred which has the least proportional logarithm opposite to it ; for, the greater the velocity of the Moon from or towards a Star, the greater is the reliance to be placed on an observation of the distance ; and it is a property of proportional logarithms to decrease as their natural numbers increase : a smaller proportional logarithm, therefore, indicates a greater velocity of the Moon, or a greater variation of distance in the interval, upon which the value of the observation depends. Thus, on April 20, 1859, between *Noon* and III^h, Regulus is the most eligible star, because the proportional logarithm, 2818, is less than that of any other ; and, by inspecting the columns of proportional logarithms, it will appear to deserve the preference until the end of the day.

On the 19th day of September, between IX^h and *Midnight*, the following is the order of preference, as indicated by the proportional logarithms, viz., α Arietis, Saturn, Pollux, Jupiter, α Pegasi, Sun, Fomalhaut, Aldebaran.

It is by no means to be inferred from these remarks that observations of any of the distances are to be neglected ; on the contrary, every registered star should invariably be observed when an opportunity offers. If, however, on a comparison of results, a considerable difference should be discovered, the proportional logarithms will indicate the stars which are least liable to be affected by errors of observation, and therefore deserving of a greater degree of confidence as to the accuracy of the results obtained from them.

Page XIX. of each Month.

Configurations of the Satellites of Jupiter.

In addition to the explanation given at the foot of the page, it may be remarked, that when two Satellites are in or near conjunction, instead of the usual symbol (δ), it has been thought better to place one above the other, without regard to their actual latitudes, but merely to distinguish them in their relation of *upper* and *lower*.

The Satellites are in the superior parts of their orbits, or have Jupiter between them and the Earth, when they are moving from West to East, or towards the right-hand of the page ; but they are in the inferior parts of their orbits, or between the Earth and Jupiter, when they are moving from East to West, or towards the left-hand : in the former case Eclipses and Occultations occur, and in the latter Transits of the Satellites and their Shadows.

If an inverted telescope be directed towards Jupiter on August 1, 1859, at 16^h mean time, the Satellites will appear to an observer at Greenwich in the positions as laid down in the table. The 1st and 2nd Satellites, which are *really* to the left of the planet, will appear to the right of it ; and the 3rd and 4th, which are *really* to the right, will appear to be to the left.

West and *East*, at the head of the page, are inserted to show the positions of the Satellites with respect to Jupiter, as they would appear in a telescope that does *not* invert. Jupiter being always to the south of the zenith of Greenwich, the Satellites which are here laid down on the left of Jupiter would appear to the *West*, and those on the right-hand to the *East* of the planet.

As regards their positions to the east or west, the page viewed directly, exhibits the Satellites in an inverted order ; but if the leaf be turned over, and the page

viewed from the other side, they will appear in their real positions. The simplest mode of changing the position of a Satellite from apparent to real, and *vice versé*, is to draw a line from the Satellite through Jupiter's centre, and to place the Satellite upon this line at the same distance from the centre as before, only on the opposite side. If this operation be performed upon the Configurations as laid down in this volume, the Satellites will be reduced to their real positions.

As the Configurations are given for *mean astronomical time*, which agrees with *civil time* only from 0^h to 12^h, or from noon to midnight, when the time exceeds 12^h the excess will indicate the civil time of the succeeding day of the month.

Thus in July, 1859, the Configurations are given for 16^h mean time, but the 16th hour from noon is the same as the 4th hour from the following midnight, when a new civil day has commenced. The appearances, therefore, relate to 4^h A.M. of the day following, according to the common mode of reckoning time; that is, the Configurations at 16^h on July the 26th relate to 4^h A.M. on July the 27th.

The Configurations enable an observer to distinguish the Satellites from each other, and from Stars in the vicinity of Jupiter.

Page XX. of each Month.

1. *Logarithms of A, B, C, D, for correcting the Places of the Fixed Stars.*

In the formulæ which express the relation of the apparent place of a Star to its mean place, and reciprocally, there are certain factors which are independent altogether of the Star's place, and are therefore common to all Stars. These factors depend upon the longitudes of the Sun, Moon, and Moon's ascending Node.

The logarithms here given are the logarithms of these independent factors conveniently arranged for incorporation with other terms depending upon each particular Star, according to the method recommended by the late Professor Bessel. They have been computed for mean midnight at Greenwich, according to the formulæ exhibited at page 363, omitting in C and D the terms depending on z (§).

In the form under which they now appear, they are chiefly used in conjunction with the Catalogue of the British Association,* which contains the logarithms of the remaining factors depending on the Star's place; and for the reduction of any Star in that Catalogue, they appear to afford every facility that can be desired.

Where, however, the apparent place of any Star, *not in the British Association Catalogue*, is required, similar quantities to those must either be computed with reference to the particular Star, before we can use the A, B, C, D, or recourse must be had to other and independent means; such, for instance, as are afforded by the table at pages 364 and 365, which serves equally for all Stars. The formulæ by which this table has been constructed are given at page 363.

The following Examples will sufficiently illustrate the mode of using both tables.

* "The Catalogue of Stars of the British Association for the Advancement of Science; containing the Mean Right Ascensions and North Polar Distances of eight thousand three hundred and seventy-seven Fixed Stars, reduced to January 1, 1850: together with their annual precessions, secular variations, and proper motions, as well as the logarithmic constants for computing precession, aberration, and nutation. With a Preface explanatory of their Construction and Application. By the late Francis Bailey, Esq." London, 1845. 4to.

2. *Mean Time of Transit of the First Point of Aries.*

The time in this column shows the distance of the *mean* Sun from the meridian, at the instant when the *true* point of intersection of the ecliptic and equator (called the first point of Aries) is on the meridian of Greenwich; and as the distance of the first point of Aries from the meridian, at the instant the mean Sun is on the meridian, is denominated sidereal time at mean noon, this may, by analogy, be termed the *mean time at sidereal noon*. It is the time which ought to be shown by a mean time clock adjusted to the Greenwich meridian, at the moment that a clock, adjusted to sidereal time, indicates exactly $0^h 0^m 0^s$. The use of this column is to facilitate the reduction of sidereal to mean solar time, with the help of the Table of Time Equivalents, given at pages 522 and 523 of this volume, as has been already explained at page 536.

3. *Mean Equinoctial Time.*

Mean Equinoctial Time signifies the mean time elapsed since the instant of the mean vernal equinox. The numbers in this column represent this time, at every mean noon, in mean solar days and fractional parts of a day; it is reckoned from the mean vernal equinox of 1858, between January 1^d and March 22^d·550375, but after March 22^d·550375 from the vernal equinox of 1859; for the Equinoctial Year has been assumed equal to 365·242216 mean solar days; and as the Equinoctial Time corresponding to the mean noon of March 22, 1859, is 364^d·691841, it is evident that the Equinoctial Year of 1858-59 will be completed, and a new year commenced, at 0^d·550375 after Mean Noon of the 22nd.

The Fraction of the day at the head of the column is common to all the days of the Equinoctial Year. Thus at mean noon of January 19, 1859, the Equinoctial Time is 302^d·691841, and on January 20 it is 303^d·691841, and so on until March 22^d·550375, when the year terminates, and the fractional part of the day changes. At Mean Noon of March 23, 1859, the Equinoctial Time is 0^d·449625, and this fraction is to be annexed to all the numbers in the column of days, from the period of the change until the equinox of 1860.

At the instant the mean Sun arrives at the mean vernal equinox, it must also be on *some* meridian, and this meridian will then have its equinoctial time corresponding with its mean solar time, each of which will be $0^h 0^m 0^s$, and they will continue to correspond throughout the Equinoctial Year. At the end of the Equinoctial Year, the Sun will have passed this meridian 365 times, and have performed, besides, a certain portion of its 366th diurnal revolution, viz. 0^d·242216; it will, therefore, have arrived at some other meridian, which will now, in its turn, reckon the mean equinoctial and mean solar time from the same point, and remain constant for the year. Thus the meridian, from which the time is reckoned, is shifting its position at the end of every year by 0^d·242216, or 5^h 48^m 47^s·46, to the Westward. Between the vernal equinoxes of 1859 and 1860, this itinerant meridian corresponds to Longitude 0^d·449625 East, or 10^h 47^m 27^s·60, East of Greenwich.

This species of time was first introduced in the Supplement to the NAUTICAL ALMANAC for 1828, with a very full explanation of its nature and use. It there appears, that the use of Equinoctial Time is to afford an uniform date, which shall be independent of the different meridians, and of all inequalities in the Sun's motion, and shall thus save the necessity, when speaking of the time of any event's happening, of mentioning at the same time the place where it was observed or computed. Thus, it is the same thing to say that a comet passed its perihelion on January 5, 1859, at 5^h 47^m 0^s·0

mean time at Greenwich; at $5^h 56^m 20^s \cdot 6$, mean time at Paris; or at $1858^y 288^d 22^h 23^m 15^s \cdot 06$ equinoctial time; but the former dates make the localities of Greenwich and Paris enter as elements of the expression; whereas the latter expresses the period elapsed since an epoch common to all the world, and identifiable independently of all localities. By this means all ambiguities in the reckoning of time are supposed to be avoided.

To convert mean solar into equinoctial time: To the corresponding Greenwich mean time add the equinoctial time at mean noon of the same day at Greenwich: the sum will be the equinoctial time required. Thus, in the instance of the comet before alluded to, Paris being $9^m 20^s \cdot 6$ East of Greenwich, subtract this from the Paris time and we get $5^h 47^m 0^s \cdot 0$ for the corresponding Greenwich time, to which add $288^d \cdot 691841$, or $288^d 16^h 36^m 15^s \cdot 06$, the Mean Equinoctial Time at Greenwich mean noon of January 5, and the sum will represent the mean equinoctial time of the comet's passage of its perihelion, viz., $288^d 22^h 23^m 15^s \cdot 06$, from the vernal equinox of the year 1858.

It may here be stated, that in the Supplement to the Nautical Almanac for 1828, the equinoctial time is based on the mean Longitude in Delambre's Solar Tables, and an assumed *invariable* length of the Equinoctial year = $365 \cdot 242264$ mean solar days, with a recommendation that any subsequent improvements in the solar theory be disregarded. An alteration was, however, made in the Nautical Almanac for 1834, and continued to 1856, by substituting Bessel's mean Longitude and his *variable* length of the Equinoctial year. Sir John Herschel has suggested as an approximation to consistency, the correction of the equinoctial times 1827-28 to 1833-34, for the difference between Bessel and Delambre, and the permanent adoption, after 1856, of $365 \cdot 242216$ mean solar days for the length of the Equinoctial year. Between 1834 and 1856, the error arising from the assumed variable length is too minute to require notice, being at most $\cdot 000002$, and generally less.

The corrections of 1827-28 to 1833-34 are as under:—

1827-28	^d +0 ^o 001802
1828-29	001848
1829-30	001894
1830-31	001940
1831-32	001986
1832-33	002032
1833-34	+0 ^o 002078

4. Day of the Year.

The numbers in this column indicate the complete days at mean noon which have elapsed since mean noon of January 1. Mean noon of January 1 is therefore reckoned 0, and 1 is found opposite to that of January 2, because at that instant one entire day has elapsed.

5. Fraction of the Year.

These fractions are the quotients found by dividing the numbers in the preceding column by $365 \cdot 242$. The day and fraction of the year are useful in many Astronomical calculations.

Obliquity of the Ecliptic. (Page 242.)

The apparent inclination of the plane of the Ecliptic to that of the Equator is here given for every 10th day of the year, and continued to January 6 of the following year, marked December 37 for the sake of convenience. This inclination is ever varying, as well from the effect of its mean diminution, as of the nutation of the earth's axis: it is an important element in deducing the positions of the heavenly bodies, with reference to either of the planes, when we know their positions with respect to the other; as, for instance, in computing Right Ascensions and Declinations from Longitudes and Latitudes, and *vice versé*. If the apparent Obliquity be required for any date not to be found in the Table, it may be obtained by simply taking the proportional part of the variation of the obliquity corresponding to the interval which comprises the given date. Thus, the apparent Obliquity on November 1, 1859, is $23^{\circ} 27' 34'' \cdot 21$. For the variation of the Obliquity in the ten days between October the 28th and November the 7th, is $0'' \cdot 25$, or $0'' \cdot 025$ for one day, and this being multiplied by 4, the number of days between October 28th and November 1st, gives $0'' \cdot 10$, to be subtracted from the Obliquity of October the 28th. For most purposes, however, the Obliquity corresponding to the date in the Table nearest to the given date is sufficient, as is evident from an inspection of the quantities.

Sun's Horizontal Parallax. (Page 242.)

The Sun's Horizontal Parallax is the *greatest* angle under which the equatorial semidiameter of the earth would appear at the Sun's centre. It varies inversely as the distance, and the numbers in this column show the values for every tenth day of the year.

The Parallax serves for reducing a solar observation made at the surface of the earth to what it would have been if made at the centre.

Sun's Aberration. (Page 242.)

The progressive motion of light, combined with the motion of the Earth in its orbit, causes the Sun to appear in a different position from that which he really occupies, the true position being always in advance of the apparent. The numbers in this column indicate, for every 10th day of the year, the amount of aberration, or the quantity to be applied to the *true* Longitude of the Sun to obtain the *apparent* Longitude. The Longitudes derived from the solar tables include aberration, and are therefore *apparent* Longitudes, such as are contained in this Ephemeris. If the *true* Longitude of the Sun be wanted, as is the case in finding the longitude of the Earth for the calculation of the Geocentric place of a body, the aberration must be applied with a contrary sign. Thus, on April 1, 1859, at mean noon, by adding $20'' \cdot 45$, the amount of aberration, to $11^{\circ} 14' 8'' \cdot 0$, the apparent Longitude of the Sun, we obtain $11^{\circ} 14' 28'' \cdot 45$ for the true Longitude.

Precession in Longitude. (Page 242.)

This column contains the amount of the retrograde motion on the Ecliptic of the point of intersection of the Equator and Ecliptic, or first point of Aries, for each 10th day from January 1, 1859, and is useful for reducing a longitude reckoned from the *Mean* Equinox of any given date to that of January 1, or any other date.

Thus, suppose it were required to refer the true Longitude of the Sun on April 1, 1859, to the mean Equinox of January 1, 1859.

The *apparent* Longitude, from the true equinox of April 1, is $11^{\circ} 14' 8''.0$; the aberration $-20''.45$ and the Equation of the Equinoxes $+8''.65$ being applied with the signs changed, give $11^{\circ} 14' 19''.80$ for the *true* longitude from the mean equinox of April 1; and subtracting $12''.38$, the amount of precession, there results $11^{\circ} 4' 7''.42$ for the true Longitude of the Sun on April 1, but reckoned from the mean equinox of January 1, 1859.

Equation of the Equinoxes. (Page 242.)

The Solar and Planetary Tables furnish us with the places of the heavenly bodies referred to the mean equinox; but the true place of the equinox at any time differs from its mean place, by a quantity which is termed the Equation of the Equinoxes; and the numbers here given show the value of the equation for every 10th day of the year. They are to be applied, with their proper signs, to the Longitudes reckoned from the mean equinox, to obtain the values with respect to the true equinox.

If the Longitude of a body be given with reference to the true equinox, as in this Ephemeris, and it be required to find its Longitude reckoned from the mean equinox, the equation of the equinoxes must be applied with a contrary sign. Thus, the Longitude of the Sun, reckoned from the true equinox, on April 1, 1859, at mean noon, is $11^{\circ} 14' 8''.0$, and the Equation of the Equinoxes is $+8''.65$; therefore, applying it with the contrary sign, the difference $11^{\circ} 13' 59''.35$, is the Sun's Longitude from the *mean* equinox on that day.

The Equation corresponding to any date not contained in the table, may be obtained in the usual way by interpolation.

The Equation of the Equinoxes in Right Ascension, in a similar manner, enables us to find the *apparent* point of intersection of the Ecliptic on the Equator; and is necessary in computing sidereal time, &c.

Mean Longitude of ('s ascending Node. (Page 242.)

This column contains the Mean Longitude of the Moon's ascending Node, at mean noon of every 10th day of the year, reckoned from the mean equinox. The place for any intermediate day is easily found from the daily motion inserted at the foot of the column. The Longitude of the Node is necessary in many calculations; it is sometimes used to determine roughly the Stars which are likely to undergo occultation by the Moon.

Sun's Co-ordinates. (Pages 243 to 250.)

These pages contain for each Greenwich mean noon the Sun's true Geocentric Co-ordinates X, Y, Z; X being measured on a line passing through the true vernal Equinoctial point of the date; Y, on a line in the plane of the Equator, in the direction of the first point of Cancer; and Z, perpendicular to the plane of the Equator, towards the North. To facilitate cometary calculations reductions are given for converting the co-ordinates X, Y, Z, referred to the true equinox of the date, into co-ordinates referred to the mean equinox of January 1, 1859.

Ephemeris of the Planets. (Pages 251 to 359.)

These pages contain the Geocentric and Heliocentric places of the Planets, Mercury, Venus, Mars, Jupiter, Saturn, and Uranus.

The Geocentric places are the places of the centres of the planets, as they would appear from the centre of the Earth; the Heliocentric, such as they would appear from the centre of the Sun.

The positions are given for Greenwich Mean Noon and the Time of Transit on every day of the year. The Geocentric Right Ascensions and Heliocentric Longitudes, are reckoned from the true equinox. The Geocentric Right Ascensions and Declinations are affected with aberration, and are therefore *apparent* positions.

By means of the positions of Venus, Mars, Jupiter, and Saturn, and particularly of Venus and Jupiter, which are frequently visible when the Sun is above the horizon, the Latitude, Time, and Variation of the Compass, may be found with nearly as much facility and accuracy as by the Sun.

The column headed "Meridian Passage" shows the mean time of the Planet's transit over the meridian of Greenwich, and serves to find the mean time of transit over any other meridian. As in the instance of the Moon before noticed, there are some days on which the planets do not pass the meridian; these are indicated by two asterisks (* *). If we refer to page 254, we shall find that Mercury does not pass over the Greenwich meridian on March 3rd, and for a similar reason, viz., that the planetary day is here longer than the mean solar day, and commences so near, but previously, to the noon of the 3rd, viz., $2^m 8$, as to want still $0^m 1$ of its completion at the termination of the 3rd day. The planetary day therefore, includes the solar day of March 3rd: it begins *before* the solar day and ends *after* it, and the planet cannot arrive at the meridian at any period of it.

Another phenomenon takes place in the case of the planets, which, however, does not occur with the Moon; it is that of two transits on the same day, which arises from the planetary day being sometimes *shorter* than the solar day, commencing *after* and terminating *before* the solar day, and thus falling entirely within it. This cannot be the case with the Moon, because the lunar day is always greater than the solar day. When two transits occur, the times of both are registered, as at page 262, August 27th, where it appears that Mercury passes the Greenwich meridian $4^m 9$ after mean noon of the 27th, and again at $23^h 57^m 8$ on the same day, or $2^m 2$ before the arrival of the following Mean Noon.

The positions of the planets for any time not given in the Ephemeris, and under any other meridian than that of Greenwich, are to be found by interpolation in the usual way. *Example:* Required the Right Ascension and Declination of Venus at 6^h Mean Time on June 15, 1859, in longitude 30° west of Greenwich; also the time of Venus' passage over this meridian on the same day. The difference of longitude 2^h added (because it is west) to the given time, gives 8^h for the corresponding Greenwich time.

1. *For the Right Ascension.* The Right Ascension on June 15 is $3^h 36^m 48^s 49$, and on June 16 it is $3^h 41^m 41^s 84$; the difference $4^m 53^s 35$, is the variation of the Right Ascension in 24 mean hours; therefore $24^h : 4^m 53^s 35 :: 8^h : 1^m 37^s 78$ the proportional part of the variation answering to 8^h ; and this proportional part added (because the Right Ascensions are increasing) to $3^h 36^m 48^s 49$, the Right Ascension at mean noon on June 15, gives $3^h 38^m 26^s 27$ for the Right Ascension required.

2. *For the Declination.* The Declination on June 15 is N. $17^\circ 52' 59'' 9$, and on the 16th it is N. $18^\circ 11' 16'' 2$, the difference, $18' 16'' 3$, is the variation in 24

hours ; and the proportional part of this variation for 8^h is $6' 5'' \cdot 4$, which, added to the Declination at noon on the 15th, gives N. $17^\circ 59' 5'' \cdot 3$ for the Declination required.

3. *For the Meridian Passage.* Take the difference of the times of two consecutive transits ; and considering this difference as an acceleration or retardation of the Meridian Passage while the planet has passed over 24^h of geographical longitude, take the proportional part of it, due to the difference of meridians, for a correction to be applied to the Meridian Passage at Greenwich, bearing in mind that in east longitude the passage precedes that at Greenwich, when times are accelerated, and follows it, when they are retarded ; and the contrary in west longitude. In the present case Venus passes the meridian of Greenwich on June 15 at $22^h 4^m \cdot 7$, and on June 16 at $22^h 5^m \cdot 7$, the difference is $1^m \cdot 0$, therefore $24^h : 1^m \cdot 0 :: 2^h : 0^m \cdot 1$, the proportional part to be added to $22^h 4^m \cdot 7$, (because the passages are accelerated, and the longitude is west of Greenwich,) which gives $22^h 4^m \cdot 8$, mean time at the given place, for the Meridian Passage. Where great accuracy is not required, as in predicting the time of passage, in order to be prepared for observing the altitude of the planet on the meridian, for the determination of the latitude, this method will suffice.

The Right Ascension and Declination at Transit over the Meridian at Greenwich, are readily reduced to the time of transit over any other meridian not far distant, by means of their Variations in 1 hour of Longitude. Thus : prefix the sign — to the Longitude of the proposed meridian if it be east of Greenwich, but + if it be west, and multiply it by the variation ; the product applied *algebraically* (South Declination being considered as negative) to the transit results for Greenwich, will give those for the proposed meridian. *Example:* Suppose the Right Ascension and Declination of Venus were required at Vienna on October 23rd, 1859. Vienna is east of Greenwich $1^h 5^m 31'' \cdot 9$, or — $1^h \cdot 092$, and the “Variation of Right Ascension in 1 hour of Longitude” on October 23rd is + $12'' \cdot 01$: the product of these numbers is — $13'' \cdot 11$, which, applied to $14^h 16^m 30'' \cdot 62$, the Transit Right Ascension at Greenwich, gives $14^h 16^m 17'' \cdot 51$ for that at Vienna. The Variation of the Declination on October 23rd is — $66'' \cdot 7$, and the product of — $66'' \cdot 7$ and — $1^h \cdot 092$ is + $1' 12'' \cdot 8$, which applied to S. or — $12^\circ 55' 4'' \cdot 0$, gives S. $12^\circ 53' 51'' \cdot 2$ for the Declination at Vienna.

The “Sid. Time of Sem. pass. Mer.” (Sidereal Time of the Semidiameter passing the Meridian,) serves to reduce an observation of the Right Ascension of the limb, to that of the centre, and the “Semidiameter” answers a similar purpose for the Declination.

The “Hor. Par.,” or Horizontal Parallax, serves for reducing an observation made at the surface to the centre of the Earth.

Fixed Stars. (Pages 360 to 423.)

In pages 360 to 362 are given the Mean Right Ascensions and Declinations of 147 fixed Stars for Jan. $0^d \cdot 385$, 1859, together with their Annual Variations.

North Declination is distinguished by N., and South Declination by S.

The sign + prefixed to an Annual Variation of Right Ascension indicates that the variation is to be *added to*, and the sign —, that it is to be *subtracted from*, the Right Ascension : also, for Stars having North Declination, + signifies *add*, and — *subtract* : but for Stars of South Declination, + denotes that the Variation is to be *subtracted from*, and — that it is to be *added to*, the Declination.

*Example * 1.* Required the Mean Right Ascension and Declination of α Tauri or *Aldebaran* on May 31, 1859. The Annual Variation of the Right Ascension is $+3^{\circ}43'41''$; the Fraction of the year corresponding to May 31, is $.4107 + .0017 = .4124$ (page XX. of May); the product of these numbers ($1^{\circ}41'6''$) is the proportional part of the annual variation due to the period elapsed since January 0 $.385$ which *added*, because the sign is $+$, to the Mean Right Ascension on Jan. 0 $.385$, viz., $4^{\text{h}} 27^{\text{m}} 50^{\text{s}}.000$, gives $4^{\text{h}} 27^{\text{m}} 51^{\text{s}}.416$, for the Mean Right Ascension on May 31. The Annual Variation of the Declination is $+7^{\circ}6'73''$, which, multiplied by $.4124$ as before, and the product ($3^{\circ}16'$) *added*, because the sign is $+$ and the Declination *North*, to the Mean Declination on Jan. 0 $.385$ 1859, viz., N. $16^{\circ} 13' 20''.00$, gives N. $16^{\circ} 13' 23''.16$, for the Mean Declination required.

Example 2. Required the Mean Right Ascension and Declination of β Ursæ Minoris on June 1, 1859. Here the Annual Variation of Right Ascension is $-0^{\circ}26'02''$, and the fraction of the Year $.4134 + .0017 = .4151$ (page XX. of June); the product ($0^{\circ}10'8''$) therefore being *subtracted*, because the sign of the Annual Variation is $-$, from $14^{\text{h}} 51^{\text{m}} 9^{\text{s}}.663$, the Right Ascension on Jan. 0 $.385$, gives $14^{\text{h}} 51^{\text{m}} 9^{\text{s}}.555$, for the Right Ascension on June 1, 1859.

For the Declination, we have the Annual Variation $= -14^{\circ}7'54''$, which, multiplied by $.4151$, gives $6^{\circ}12'$. The Declination being *North*, and the sign of the Variation $-$, this product must be *subtracted* from N. $74^{\circ} 43' 53''.55$, and the result is N. $74^{\circ} 43' 47''.43$.

Example 3. Required the Mean Declination of α Scorpii or *Antares* on May 31, 1859. The Annual Variation is $-8^{\circ}44'2''$, and the fraction of the Year $.4124$; the product of these numbers ($3^{\circ}48'$) being *added*, because the Declination is *South*, and the sign of the Variation $-$, to the Declination on Jan 0 $.385$, viz., S. $26^{\circ} 6' 55''.04$, the sum, S. $26^{\circ} 6' 58''.52$, is the Declination on May 31, 1859.

Next (page 363) follow Bessel's Formulæ of Reduction; and (pages 364 and 365) a Table for the reduction of Stars, independently of the Constants, in the Catalogue of the British Association, an example of which is given at page 544.

The apparent places of α and δ Ursæ Minoris are given for every day of the year, and those of the remaining 145 Stars for every *tenth* day.

The hours and minutes of Right Ascension, and the degrees and minutes of Declination, are placed at the heads of the columns as constants, and belong equally to all the numbers below them. This arrangement has rendered it necessary in numerous instances, to continue the seconds beyond 60, as the width of the page would not permit of otherwise indicating any change in the minutes. Thus, the apparent Right Ascension of γ Ceti at page 377, on Nov. 7, 1859, is registered $2^{\text{h}} 35^{\text{m}} 64^{\text{s}}.38$, and is to be read $2^{\text{h}} 36^{\text{m}} 4^{\text{s}}.38$. On the same day the Declination of ϵ Tauri at page 379 is registered N. $18^{\circ} 51' 68''.9$, which signifies N. $18^{\circ} 52' 8''.9$.

The small figures on the right hand of the vertical column of seconds represent the differences of the quantities above and below them on the left, or the variation of Right Ascension and Declination in 10 days, and serve to find, by interpolation, the

* Similar examples to these have been given in the Nautical Almanacs 1834 to 1858, but the Seaman will find it more convenient to consult pages 366 to 421, from which the Star's Right Ascension and Declination can be obtained with more accuracy by inspection. Thus, in page 379, the Right Ascension of *Aldebaran* on May 31, is $4^{\text{h}} 27^{\text{m}} 50^{\text{s}}.59$, and the Declination N. $16^{\circ} 13' 28''.0$.

values for an intermediate day. As in the case of the Planets before explained, a Star will sometimes arrive at the meridian twice in one apparent solar day. When this occurs on one of the given dates, the Star's place is registered for each transit, as at page 385, for α Canis Majoris on June 30; but in other cases the day of the month on which two transits occur is placed opposite to the interval. In these particular instances the Star passes the meridian 11 times in the 10 apparent solar days, and consequently the Right Ascension or Declination at transit on any intermediate day is to be determined by taking $\frac{11}{10}$ th part, instead of $\frac{1}{10}$ th, of the variation in the interval. Thus, at page 382, we find in the instance of α Orionis the figures 14 opposite the interval between June 10 and June 20, indicating that the double transit occurs on June 14, and a difference of $0^{\circ}12'$ opposite to the interval between the seconds belonging to those dates, $\frac{11}{10}$ of which is $0^{\circ}11'$; for the first transit on June 14, we should therefore multiply $0^{\circ}11'$, by the days elapsed since June 10, but for the second and following transits by the days elapsed increased by 1.

When extreme accuracy is required, the apparent places of the 5 Polar Stars demand a further correction, depending on the terms which involve 2ϵ . The apparent places do not include these corrections, on account of the rapid variation of the argument, viz., about 26° in a day, but they are given in a Table at pages 422, 423, for every degree of the Moon's Longitude, and may be readily applied, agreeably to the precept at the foot of that Table.

Formulae for correcting for *daily* aberration are given in the Preface.

Moon-Culminating Stars. (Pages 424 to 462.)

Those Stars are denominated Moon-Culminating Stars, which being near the Moon's parallel of Declination, and not differing much from her in Right Ascension are proper to be observed with the Moon, in order to determine differences of meridians. This is effected by comparing the differences of the observed Right Ascensions of such a Star and the Moon's bright limb at any two meridians. If the Moon had no motion, the difference of her Right Ascension from that of the Star would be constant at all meridians; but in the interval of her transit over two different meridians, her Right Ascension will have varied, and the difference between the two compared differences will exhibit the amount of this variation, which added to the differences of the meridians, shows the angle through which the westerly meridian must revolve before it comes up with the Moon; hence, and knowing the rate of her increase in Right Ascension, the difference of Longitude may be easily obtained.

For the determination of this variation, recourse has hitherto been had to actual observations made at different meridians, because any errors in the computed places of the Moon and Stars are thereby avoided: and the places were formerly given merely with the view of indicating the times when the observations were to be made. In the present list, however, the Right Ascensions are given with every possible degree of accuracy, so that they may be considered, at least approximately, in the light of corresponding observations made at Greenwich, and be taken to represent the indications of the Greenwich instruments, the same as though they had been actually observed. The traveller has thus an opportunity of rendering his observations immediately available for determining his longitude with considerable accuracy.

The Right Ascension of the Moon's bright limb and Declination of her centre, at the instant of their respective transits at Greenwich, are given for the lower as

well as the upper Culmination, L. being put to denote the Lower Culmination, and U. the Upper Culmination; the Roman numerals indicate the limb of the Moon with reference to its transit over the meridian. The Moon's age at the time of her upper transit, to the nearest tenth of a day, is inserted in the column containing the magnitudes of the Stars.

The numbers in the column "Var. of ζ 's R.A. in one hour of Long." represent the Variation in Right Ascension of the Moon's Limb during the interval of her transit over two meridians, equidistant from that of Greenwich, and one hour distant from each other. They have been deduced from the Right Ascensions of the *bright limb*, and therefore include the effect produced by the change of the semidiameter.

They serve to determine the Longitude where the difference of meridians is not very great; but where this difference is considerable, and extreme accuracy is wanted, that variation in Right Ascension should be used which corresponds to the middle of the interval between the observations, which may be readily obtained by interpolation. They also serve to determine the Right Ascension of the bright limb at its transit over any other meridian. Thus: Multiply the difference of longitude between Greenwich and the given meridian, by the variation; and, according as the given meridian is east or west of Greenwich, subtract or add the product to the Right Ascension at Greenwich; the result will be the Right Ascension of the bright limb at transit over the proposed meridian. *Example:* On August 14, 1859, the Right Ascension of the Moon's second limb is $22^{\text{h}} 31^{\text{m}} 16^{\text{s}} \cdot 22$, at its upper transit at Greenwich, and the variation for 1 hour of longitude is $110^{\circ} \cdot 69$: Required the Right Ascension of the limb at its upper transit at Paris. Paris is $9^{\text{m}} 20^{\text{s}} \cdot 6$, or $0^{\text{h}} \cdot 156$, East of Greenwich; therefore, multiplying $110^{\circ} \cdot 69$ by $0^{\text{h}} \cdot 156$, and subtracting the product $17^{\circ} \cdot 27$ from $22^{\text{h}} 31^{\text{m}} 16^{\text{s}} \cdot 22$, we have $22^{\text{h}} 30^{\text{m}} 58^{\text{s}} \cdot 95$, for the Right Ascension at Paris.

In a similar manner the Declination may be determined at transit over any other meridian not far distant from that of Greenwich, bearing in mind that South Declinations and East Longitudes are to be considered as *negative*. Thus, in the above *Example*: The Moon's Declination at her upper Transit at Greenwich is $S. 7^{\circ} 49' 42'' \cdot 1$ and the "Var. of ζ 's Dec. in 1 hour of Long." is $+ 826'' \cdot 8$, which, multiplied by $- 0^{\text{h}} \cdot 156$, gives $- 2' 9'' \cdot 0$, to be applied to S. or $- 7^{\circ} 49' 42'' \cdot 1$, the Declination at the upper transit at Paris is therefore $S. 7^{\circ} 51' 51'' \cdot 1$.

Where an asterisk is placed opposite to a Star's name, it is intended to denote that the Star is favourably situated for observing its Declination along with that of the Moon in both Hemispheres, with a view to the accurate determination of the Moon's Parallax.

The numbers in the column entitled "*Sid. Time of ζ 's Sem. pass. mer.,*" express the Sidereal intervals which the Moon's Semidiameter, at the time of transit at Greenwich, takes in passing the meridian, and therefore serve to determine the Transit of the centre from an observed Transit of either limb.

Eclipses. (Pages 463 to 473.)

These pages contain all the particulars necessary for indicating the times, places, &c. on the Earth where the Eclipses of the Sun and Moon will be visible; also the Elements which have been used in the calculations.

Elements of Occultations. (Pages 474 to 484.)

These are:—1. The *Apparent* places at Greenwich Mean Midnight, of the Fixed Stars to the sixth magnitude inclusive, the occultations of which will take place above the horizon at Greenwich.

2. The *Apparent* Places of those Planets and *all* Stars to the fifth magnitude inclusive, the occultations of which will be visible at *some* part of the Earth.

3. The Greenwich Mean Time at which the Moon would, if viewed from the centre of the Earth, appear to have the same Right Ascension as the Star.

4. The difference of Declination and Position of the Moon, as it would appear with respect to the Star at the instant of conjunction in Right Ascension.

5. The parallels of Latitude *beyond* which the Star cannot be occulted by the Moon.

These Elements are useful in the calculation of an Occultation; for being referable to the Moon and Star, as seen from the centre of the Earth, they are independent of geographical position, and serve equally for all places. It is only necessary to apply the difference of longitude from Greenwich to the Greenwich Mean Time of conjunction, to find the time of conjunction at any other meridian; and it is this time to which the positions of the Moon and Star here given will equally correspond.

Thus, the position of the Moon and λ Piscium on Feb. 5, 1859, at $21^h 4^m 31^s$, Mean Time at Greenwich, is the position at $21^h 13^m 51^s \cdot 6$ Mean Time at Paris, because Paris is $9^m 20^s \cdot 6$ east of Greenwich.

By Limiting Parallels are to be understood those parallels of latitude beyond which an occultation cannot *possibly* occur.

Suppose an observer situate at a star, and having the Moon between him and the Earth, and that he could see the Moon projected on the Earth's disc; he would observe it moving across the disc from west to east, covering a zone whose breadth would be equal to the apparent diameter of the Moon. Now it is only within the limits of this zone that the Occultation of a Star by the Moon can take place. To all the places through which the boundary lines pass, the Star will appear just to touch the Moon's limb; and that projected parallel of latitude, to which one of the boundary lines is a tangent, is one of the limiting parallels, while the intersection of the other boundary line with the circumference of the Earth's disc determines the other limiting parallel.

Limiting Parallels are useful to indicate whether at a given conjunction of a Star with the Moon, the positions are likely to produce an occultation in a given latitude, and thus to save considerable labour to the computer.

Thus, suppose from the times of conjunction commencing with September 6, at page 481, it were required to prepare a list of Occultations for Greenwich, whose latitude is $51^\circ 28' 38''$ N. On looking down the column of Limiting Parallels we reject at once the first two stars, because the Limiting Parallels do not comprise the parallel of Greenwich. On the same day we see that λ Sagittarii may be occulted to all the parallels of latitude between 63° N. and 7° S., which include that of Greenwich; this Star would therefore be fixed upon for calculation if no other considerations existed to cause its rejection. We observe, however, that the conjunction takes place at $21^h 9^m 45^s$, the intensity of sun-light would therefore prevent its being seen, and it would be rejected in consequence. The next Limiting Parallels having Greenwich between them, are 73° N. and 22° N., opposite λ Capricorni on the 9th, but again, sunlight would prevent its being visible; on the same day, λ Capricorni may be occulted to all the parallels

between 55 N. and 27 S. The time of conjunction in this instance, as regards sun-light, is favourable ; if, therefore, on further inquiry, the Star be found to be above the horizon of Greenwich, we should commence the calculation. It appears, however, on reference to page 486, that only a near approach of this star is visible at Greenwich. On September 16, ϵ Arietis may be occulted between the parallels of 90 N. and 35 N. ; and on reference to page 486, it will be seen that the phenomenon is visible at Greenwich.

Occultations. (Pages 485 and 486.)

These pages contain a list of the Planets and fixed Stars to the sixth magnitude inclusive, the Occultations of which by the Moon will happen when the objects are above the horizon of Greenwich, together with the Sidereal and Mean Times of the Disappearance and Reappearance, and the points on the circumference of the Moon's image, where the Star, viewed with a telescope that inverts, will disappear and reappear. By "Angle from N. Point" is to be understood the arc included between the Star, when in contact, and the point of intersection of the limb with a circle passing through the North Pole and the centre of the Moon's image ; and by "Angle from Vertex," the arc between the Star at contact, and the point where a circle, passing through the zenith and the Moon's centre, intersects the limb. These latter angles will be found very useful in observing Occultations of small stars with a telescope not mounted equatorially ; and, for the observation of a reappearance, a knowledge of the angle is absolutely necessary to enable the observer to direct his attention to the point of the Moon's limb where the Star will reappear. In some instances, Occultations have been inserted, which taking place in, or near to, the horizon of Greenwich, are not visible there, but may be visible at places not far distant from Greenwich.

Jupiter's Satellites. (Pages 487 to 506.)

These pages contain the Mean Times of the Eclipses, Occultations, Transits, and Transits of Shadows, of the Satellites of Jupiter, together with diagrams exhibiting the position of each Satellite with respect to the disc of the Planet at the moment of Disappearance or Reappearance, as it will appear in an inverting telescope. These diagrams have been laid down from calculations made for the eclipse nearest to the middle of each month ; but they will serve very well for the whole of the month, *except near opposition*, the change in the position of Jupiter and his Shadow in the interval being too small to be appreciable by the eye, as is evident by comparing the Phases for any two successive months. All the Eclipses which happen when Jupiter is 8° *above* and the Sun 8° *below* the horizon of Greenwich, are marked with an asterisk to indicate that they are visible at that place ; and those which happen when Jupiter is above, and the Sun below the horizon, are marked with a dagger, as, under very favourable circumstances, they may also be observed.

"D." denotes the instant of the disappearance of the Satellite, by entering into the shadow of Jupiter ; and "R." the instant of its reappearance at coming out of the shadow. They generally happen when the Satellite is apparently at some distance from the body of Jupiter, except near the opposition of Jupiter to the Sun, when the eclipse takes place near to the body of the planet. Before the opposition, the Disappearances and Reappearances happen on the Western side, but after opposition on the Eastern side, of the planet : with an inverting telescope, however, the appearances will be directly the contrary. Before the opposition, the Disappearances only of the first Satellite are visible : and after the opposition, the Reappearances only.

It is seldom, also, that the Disappearance and Reappearance of the second Satellite can be observed at the same eclipse; but both phenomena are generally visible with the third and fourth Satellites.

To find the time at which the Disappearance or Reappearance of any of the Satellites will take place under any other meridian than that of Greenwich, it is merely necessary to *add* the difference of longitude (*in time*) to the time of the phenomenon at Greenwich, if the meridian be *east* of Greenwich, or to *subtract* if it be *west*, and the sum or difference will be the time required. But this determines only the instant of the occurrence of the phenomenon: Jupiter may be below the horizon at this time, or he may be above it, and the intensity of sun-light, or even the brightness of twilight, may be such as to render the Satellites invisible: it is therefore necessary to ascertain the position of the Sun and Jupiter, with respect to the horizon, at the time of the phenomenon: this may be readily accomplished by means of a celestial globe, or near enough for the purpose, by finding the times of rising and setting of the objects, with the assistance of a table of semidiurnal arcs.

The Eclipses of Jupiter's Satellites, especially of the first, afford us, perhaps, the readiest means of determining the longitude; all that is necessary to be known being the exact time of observation: the difference between this time and the time at Greenwich, shows the difference of longitude at once, and it is *east* or *west* of Greenwich, according as the time of observation is *greater* or *less* than the Greenwich time.

Suppose the Disappearance of Jupiter's first Satellite to be observed on September 26, 1859, at Paris at $17^h 16^m 49^s \cdot 1$ Mean Time at that place: by reference to page 499, it appears that the Disappearance will take place at Greenwich at $17^h 7^m 28^s \cdot 5$ Greenwich Mean Time; the difference, $9^m 20^s \cdot 6$, is the difference of longitude between Greenwich and Paris; and because the Paris time is *greater* than that at Greenwich, we infer that Paris is to the east of Greenwich.

Independent of defects in the tables, there are difficulties attending the observation of these phenomena which unfit them for *accurate* determinations of longitude. Different telescopes give different results; and care should be taken to have recourse to those corresponding observations which have been made under circumstances the most similar, and particularly with telescopes of the same quality and power. When extreme accuracy is not required, the Eclipses of the Satellites will always afford a good approximation towards the difference of meridians, and observations of them should on no account be neglected, especially when the Disappearance and Reappearance of the same Satellite are both visible.

The times of Occultation and Transit, are only approximate. They are inserted in order to apprise Astronomers when they are about to happen, as observations of them may tend to improve the Tables of the Satellites. The instruments required to observe them with anything like precision will preclude the possibility of their ever becoming available at sea.

An asterisk signifies that the phenomenon is visible at Greenwich, and a dagger that the phenomenon *may be* visible under favourable circumstances, the limits in either case being the same as those adopted for the eclipses. "D." denotes the disappearance of the Satellite behind the disc of Jupiter, and "R." its reappearance; "I." signifies the ingress, or beginning of a transit of a Satellite, or its shadow, across the disc of Jupiter, and "E." the egress, or termination.

Phenomena. (Pages 507 to 509.)

In these are given the conjunctions in Right Ascension of the Planets with the Moon and with each other, and the conjunctions in Right Ascension and Declination of the Planets with certain Stars; also the times when the Planets are in those parts of their orbits most favourable for observation, with a view to the more accurate determination of their elements; and other notices, chiefly of use to the astronomer.

Saturn's Ring. (Page 510.)

In this page are given the quantities which enable us to determine the position of the Ring of Saturn at intervals of 20 days throughout the year, and whether it be visible or not. The value of p shows the position of the minor axis of the Ring with respect to a circle of declination, those of a, b, a', b' , the Ring's apparent magnitude, and a comparison of those of l and l' , its visibility or otherwise. For the plane of the Ring to be *visible*, it is necessary that the Sun and the Earth should be elevated on the same side of it, which is the case during the whole of 1859. The circumstances which determine the *invisibility* of the Ring are, 1st, when its plane passes through the centre of the Sun, or $l' = 0$; 2nd, when it passes through the centre of the Earth, or $l = 0$, and at this time b also $= 0$; 3rd, when the Sun and Earth are on different sides of the plane of the Ring, for the Earth in this case will have the unilluminated side of the Ring turned towards it.

Moon's Libration, &c. (Page 511.)

This page contains the *Mean Time of the greatest Libration of the Moon's Apparent Disc*; and the *Illuminated portion of the Discs of Venus and Mars* at the middle of each month.

Tides. (Pages 512 to 515.)

The Mean Time of High Water at London Bridge is here given for every day of the year, on the assumption that the time of high water on full and change days, or the *Establishment of the Port*, is $2^h 7^m$. The first high tide which happens after Mean Noon of any day is inserted in the 1st column, and the second in the 2nd column. Where a line (—) is inserted, it indicates that there is only *one* high tide on that day. Thus on January 16 there is only one high tide: it occurs at $11^h 53^m$, but the succeeding high tide does not take place until 28^m after mean noon of January 17.

The times of high water at full and change of the Moon, as given at pages 514 and 515, are reckoned from *Apparent Noon*: they represent the *Establishments of the Ports*, that is, the *actual times of High Water when the Moon passes the meridian at the same time as the Sun*; or the *intervals between the times of Transit of the Moon and the times of High Water on full and change days*. They serve to determine the time of high water on any other day at those places in the usual manner.

This Table has been revised by the Admiralty Hydrographic Office.

Tables. (Pages 516 to 530.)

In page 516 is given a Table showing the Correction required on account of Second Differences in finding the Greenwich Time corresponding to a reduced Lunar Distance.

The use of this Table has been sufficiently explained, by the Examples given at page 541.

In pages 517 to 519 are given Tables for determining the Latitude by Observations of the Pole Star out of the Meridian. The method of using them is as follows :

From the observed altitude, when corrected for the error of the instrument, refraction, and dip of the horizon, subtract 1'.

Reduce the Mean Time of Observation at the place to the corresponding Sidereal Time, by the Table given at page 520.—(See *Tables of Time Equivalents*, following this article.)

With the Sidereal Time found, take out the *first correction*, with its proper sign. If the sign be +, the correction must be *added* to the reduced altitude; but if it be —, it must be *subtracted*; in either case the result will give an Approximate Latitude.

With the Altitude and Sidereal Time of observation, take out the *second correction*; and with the day of the month and the same Sidereal time, take out the *third correction*. These two corrections *added* to the Approximate Latitude, will give the Latitude of the place.

Example. On March 6, 1859, in Longitude 37° W. at 7^h 43^m 35^s Mean Time, suppose the altitude of the Pole Star, when corrected for the error of the instrument, refraction, and dip of the horizon, to be 46° 17' 28": Required the latitude.

Mean Time	- - - - -	^h ^m ^s 7 43 35
Diff. Long. (37°) in time	- - - - -	2 28 0
Greenwich Mean Time	- - - - -	<u>10 11 35</u>
Sidereal Time at Greenwich Mean Noon	- - - - -	^h ^m ^s 22 54 46
Mean Time at Place	- - - - -	7 43 35
Acceleration (Tab. page 520) for 10 ^h 12 ^m	- - - - -	<u>1 41</u>
Sidereal Time of Observation	- - - - -	<u>6 40 2</u>
Corrected Altitude	- - - - -	[°] ['] ["] 46 17 28
Subtract	- - - - -	<u>1 0</u>
Reduced Altitude	- - - - -	46 16 28
With Argument 6 ^h 40 ^m 2 ^s , First Correction	- - - - -	<u>0 10 28</u>
Approximate Latitude	- - - - -	46 6 0
Arguments, 46° 17' } Second Correction	- - - - -	+1 6
6 ^h 40 ^m } Third Correction	- - - - -	+1 24
Latitude of the place	- - - - -	<u>N. 46 8 30</u>

The *Tables of Time Equivalents*, given at pages 520 to 523, are useful for converting Mean Time into Sidereal Time, and Sidereal into Mean Time, agreeably to the example annexed to each table. They will serve also for Tables of Acceleration and Retardation, by taking the difference between each argument and its equivalent. Thus, in the Table at pages 520 and 521, the *excess* of the sidereal time equivalents above the arguments of mean time shows the *acceleration* of sidereal on mean solar intervals; and in the Table at pages 522 and 523, the *defect* of the mean time equivalents, as compared with the arguments of sidereal time, indicates the *retardation* of mean on sidereal intervals.

The concluding Table, at pages 524 to 530, contains a revised list of the *Latitudes and Longitudes of the principal Public and Private Observatories*.

SUPPLEMENT

TO

THE NAUTICAL ALMANAC,

FOR THE YEAR

1859.

THIS Supplement contains Ephemerides for the year 1856, adapted to the Meridian of Greenwich, of Ceres, Pallas, Juno, and Vesta; approximate at intervals of four days, and accurate at each transit near the times of their respective oppositions; with the elements from which they have been deduced. Also, approximate Ephemerides of all the newly discovered Planets, with the exception of Circe, Leucothea, and the two just announced, one by Dr. Luther, and the other by Mr. Goldschmidt; with elements in a few special cases of addition of perturbations.

It may be proper to remark with respect to Ceres and Juno, that the necessity for a correction of their elements has been for some time apparent; but that as regards Pallas and Vesta the case is less urgent, hence the reason for allowing the two latter to continue uncorrected for the present.

The following are the sources from whence the various Ephemerides have been derived:—

① Ceres, from the elements by Mr. Schubert, in No. 69. of the *Astronomical Journal*, with the addition of perturbations* to the dates of the Ephemeris for the opposition.

② Pallas, from the elements in page ix of the Preface to the NAUTICAL ALMANAC for 1855, with perturbations as for Ceres.

* For Ceres, Pallas, Juno, and Vesta, the perturbations are those of Venus, the Earth, Mars, Jupiter, and Saturn, assuming their respective masses to be $\frac{1}{4543}$, $\frac{1}{3329}$, $\frac{1}{5300}$, $\frac{1}{4672}$, and $\frac{1}{3549}$. The calculations were performed each 12th day, and ample provision made to secure the effect of the higher powers of the masses by previous approximate calculations at intervals of 36 days; all four planets occasionally require such treatment, but particularly Ceres.

③ Juno, from the elements in page viii of the Preface to the NAUTICAL ALMANAC for 1855, corrected as under, and with perturbations as for Ceres:—

Errors of Juno's Ephemerides near the times of 12 oppositions as indicated by the Greenwich observations, with the exception of $d\delta$, 1847, July 19, which depends on three observations made at Kremsmünster:

Date.	$\cos \delta \, da$	$d\delta$	Date.	$\cos \delta \, da$	$d\delta$
1841 March 20	$-30^{\circ}83$	$-9^{\circ}66$	1848 December 23	$+227^{\circ}51$	$-4^{\circ}97$
1842 June 9	$-24^{\circ}57$	$+12^{\circ}17$	1856 April 18	$+39^{\circ}57$	$-15^{\circ}30$
1843 August 17	$+39^{\circ}18$	$+33^{\circ}38$	1851 June 22	$+57^{\circ}44$	$+15^{\circ}96$
1845 February 5	$+47^{\circ}48$	$-26^{\circ}88$	1852 September 12	$+283^{\circ}51$	$+71^{\circ}88$
1846 April 24	$+8^{\circ}39$	$+2^{\circ}84$	1854 March 27	$+107^{\circ}12$	$-36^{\circ}70$
1847 July 19	$+46^{\circ}30$	$+25^{\circ}69$	1855 April 25	$+68^{\circ}60$	$-1^{\circ}89$

By means of the NAUTICAL ALMANAC Elements perturbed to the respective dates, the following equations of condition were formed; $100 \, d\alpha$ and $\frac{1}{10} \, d\delta$ being substituted for $d\alpha$ and $d\delta$:—

Right Ascension.

$$\begin{aligned}
 0 &= - & 30^{\circ}83 & + & 1^{\circ}2005 \, d\alpha & + & 0^{\circ}2900 \, d\delta & - & 1^{\circ}0043 \, \frac{1}{10} \, d\delta \\
 & & & + & 0^{\circ}0408 \, d\alpha & + & 2^{\circ}3387 \, d\delta & - & 34^{\circ}0377 \, \frac{1}{100} \, d\delta \\
 0 &= - & 24^{\circ}57 & + & 0^{\circ}8541 \, d\alpha & + & 0^{\circ}5268 \, d\delta & - & 0^{\circ}4519 \, \frac{1}{10} \, d\delta \\
 & & & + & 0^{\circ}1607 \, d\alpha & - & 0^{\circ}4300 \, d\delta & - & 20^{\circ}5881 \, \frac{1}{100} \, d\delta \\
 0 &= + & 39^{\circ}18 & + & 1^{\circ}7772 \, d\alpha & - & 0^{\circ}1303 \, d\delta & - & 0^{\circ}8232 \, \frac{1}{10} \, d\delta \\
 & & & - & 0^{\circ}0969 \, d\alpha & - & 3^{\circ}3878 \, d\delta & - & 34^{\circ}8362 \, \frac{1}{100} \, d\delta \\
 0 &= + & 47^{\circ}48 & + & 1^{\circ}8369 \, d\alpha & - & 0^{\circ}2021 \, d\delta & - & 0^{\circ}8343 \, \frac{1}{10} \, d\delta \\
 & & & - & 0^{\circ}1027 \, d\alpha & + & 3^{\circ}3980 \, d\delta & - & 25^{\circ}9353 \, \frac{1}{100} \, d\delta \\
 0 &= + & 8^{\circ}39 & + & 0^{\circ}8722 \, d\alpha & + & 0^{\circ}5272 \, d\delta & - & 0^{\circ}6801 \, \frac{1}{10} \, d\delta \\
 & & & + & 0^{\circ}1704 \, d\alpha & + & 0^{\circ}5098 \, d\delta & - & 8^{\circ}3438 \, \frac{1}{100} \, d\delta \\
 0 &= + & 46^{\circ}30 & + & 1^{\circ}1774 \, d\alpha & + & 0^{\circ}3207 \, d\delta & - & 0^{\circ}4086 \, \frac{1}{10} \, d\delta \\
 & & & - & 0^{\circ}0194 \, d\alpha & - & 2^{\circ}2554 \, d\delta & - & 6^{\circ}3241 \, \frac{1}{100} \, d\delta \\
 0 &= + & 227^{\circ}51 & + & 2^{\circ}9918 \, d\alpha & - & 1^{\circ}1809 \, d\delta & - & 0^{\circ}4458 \, \frac{1}{10} \, d\delta \\
 & & & + & 0^{\circ}1178 \, d\alpha & + & 1^{\circ}9791 \, d\delta & - & 0^{\circ}2664 \, \frac{1}{100} \, d\delta \\
 0 &= + & 39^{\circ}57 & + & 0^{\circ}9870 \, d\alpha & + & 0^{\circ}4376 \, d\delta & - & 0^{\circ}8965 \, \frac{1}{10} \, d\delta \\
 & & & + & 0^{\circ}1318 \, d\alpha & + & 1^{\circ}5116 \, d\delta & + & 4^{\circ}6491 \, \frac{1}{100} \, d\delta \\
 0 &= + & 57^{\circ}44 & + & 0^{\circ}9305 \, d\alpha & + & 0^{\circ}4875 \, d\delta & - & 0^{\circ}3615 \, \frac{1}{10} \, d\delta \\
 & & & + & 0^{\circ}1016 \, d\alpha & - & 1^{\circ}1518 \, d\delta & + & 8^{\circ}3306 \, \frac{1}{100} \, d\delta \\
 0 &= + & 283^{\circ}51 & + & 2^{\circ}3963 \, d\alpha & - & 0^{\circ}7552 \, d\delta & - & 1^{\circ}1434 \, \frac{1}{10} \, d\delta \\
 & & & + & 0^{\circ}0116 \, d\alpha & - & 2^{\circ}9523 \, d\delta & + & 32^{\circ}8436 \, \frac{1}{100} \, d\delta \\
 0 &= + & 107^{\circ}12 & + & 1^{\circ}2745 \, d\alpha & + & 0^{\circ}2032 \, d\delta & - & 0^{\circ}9720 \, \frac{1}{10} \, d\delta \\
 & & & + & 0^{\circ}0158 \, d\alpha & + & 2^{\circ}5424 \, d\delta & + & 24^{\circ}2150 \, \frac{1}{100} \, d\delta \\
 0 &= + & 68^{\circ}60 & + & 0^{\circ}8270 \, d\alpha & + & 0^{\circ}5220 \, d\delta & - & 0^{\circ}5003 \, \frac{1}{10} \, d\delta \\
 & & & + & 0^{\circ}1402 \, d\alpha & - & 0^{\circ}2007 \, d\delta & + & 19^{\circ}4814 \, \frac{1}{100} \, d\delta
 \end{aligned}$$

Declination.

$0 = -$	$9^{\circ} 66' -$	$0^{\circ} 2295 \, ds -$	$0^{\circ} 0479 \, d\pi -$	$3^{\circ} 2551 \, \text{r} \, dv$
	$+ 0^{\circ} 2192 \, di -$	$0^{\circ} 4508 \, d\varphi +$	$6^{\circ} 5581 \, \text{r} \, dn$	
$0 = +$	$12^{\circ} 17' -$	$0^{\circ} 0892 \, ds -$	$0^{\circ} 0646 \, d\pi -$	$0^{\circ} 7558 \, \text{r} \, dv$
	$+ 1^{\circ} 3335 \, di -$	$0^{\circ} 0549 \, d\varphi +$	$2^{\circ} 3813 \, \text{r} \, dn$	
$0 = +$	$33^{\circ} 38' +$	$0^{\circ} 2525 \, ds -$	$0^{\circ} 0490 \, d\pi +$	$3^{\circ} 1987 \, \text{r} \, dv$
	$+ 0^{\circ} 7920 \, di -$	$0^{\circ} 4228 \, d\varphi -$	$4^{\circ} 7491 \, \text{r} \, dn$	
$0 = -$	$26^{\circ} 88' -$	$0^{\circ} 1922 \, ds -$	$0^{\circ} 0131 \, d\pi -$	$3^{\circ} 1543 \, \text{r} \, dv$
	$- 0^{\circ} 7991 \, di -$	$0^{\circ} 4330 \, d\varphi +$	$2^{\circ} 4816 \, \text{r} \, dn$	
$0 = +$	$2^{\circ} 84' -$	$0^{\circ} 1455 \, ds -$	$0^{\circ} 0804 \, d\pi -$	$1^{\circ} 9553 \, \text{r} \, dv$
	$+ 1^{\circ} 0769 \, di -$	$0^{\circ} 1572 \, d\varphi +$	$1^{\circ} 5595 \, \text{r} \, dn$	
$0 = +$	$25^{\circ} 69' +$	$0^{\circ} 0507 \, ds -$	$0^{\circ} 0227 \, d\pi +$	$1^{\circ} 4979 \, \text{r} \, dv$
	$+ 1^{\circ} 3346 \, di -$	$0^{\circ} 1216 \, d\varphi -$	$0^{\circ} 0143 \, \text{r} \, dn$	
$0 = -$	$4^{\circ} 97' +$	$0^{\circ} 2029 \, ds -$	$0^{\circ} 1180 \, d\pi -$	$0^{\circ} 3507 \, \text{r} \, dv$
	$- 1^{\circ} 7773 \, di -$	$0^{\circ} 2887 \, d\varphi -$	$0^{\circ} 6119 \, \text{r} \, dn$	
$0 = -$	$15^{\circ} 30' -$	$0^{\circ} 1944 \, ds -$	$0^{\circ} 0699 \, d\pi -$	$2^{\circ} 7317 \, \text{r} \, dv$
	$+ 0^{\circ} 6900 \, di -$	$0^{\circ} 3418 \, d\varphi -$	$0^{\circ} 7633 \, \text{r} \, dn$	
$0 = +$	$15^{\circ} 96' -$	$0^{\circ} 0455 \, ds -$	$0^{\circ} 0462 \, d\pi +$	$0^{\circ} 0970 \, \text{r} \, dv$
	$+ 1^{\circ} 4136 \, di -$	$0^{\circ} 0267 \, d\varphi -$	$0^{\circ} 1631 \, \text{r} \, dn$	
$0 = +$	$71^{\circ} 88' +$	$0^{\circ} 4498 \, ds -$	$0^{\circ} 1580 \, d\pi +$	$3^{\circ} 7216 \, \text{r} \, dv$
	$- 0^{\circ} 0613 \, di -$	$0^{\circ} 4775 \, d\varphi +$	$6^{\circ} 3021 \, \text{r} \, dn$	
$0 = -$	$36^{\circ} 70' -$	$0^{\circ} 2305 \, ds -$	$0^{\circ} 0246 \, d\pi -$	$3^{\circ} 2818 \, \text{r} \, dv$
	$+ 0^{\circ} 0895 \, di -$	$0^{\circ} 4613 \, d\varphi -$	$4^{\circ} 2987 \, \text{r} \, dn$	
$0 = -$	$1^{\circ} 89' -$	$0^{\circ} 1018 \, ds -$	$0^{\circ} 0648 \, d\pi -$	$1^{\circ} 2829 \, \text{r} \, dv$
	$+ 1^{\circ} 2270 \, di -$	$0^{\circ} 0468 \, d\varphi -$	$2^{\circ} 2424 \, \text{r} \, dn$	

Treating the above by the method of least squares, the final equations become

$0 = +$	$1864^{\circ} 35' +$	$30^{\circ} 2249 \, ds -$	$2^{\circ} 7837 \, d\pi -$	$7^{\circ} 0039 \, \text{r} \, dv$
	$+ 0^{\circ} 0536 \, di +$	$2^{\circ} 7982 \, d\varphi -$	$45^{\circ} 0302 \, \text{r} \, dn$	
$0 = -$	$409^{\circ} 04' -$	$2^{\circ} 7837 \, ds +$	$3^{\circ} 5748 \, d\pi -$	$0^{\circ} 3638 \, \text{r} \, dv$
	$+ 0^{\circ} 0307 \, di +$	$0^{\circ} 3719 \, d\varphi -$	$21^{\circ} 6710 \, \text{r} \, dn$	
$0 = +$	$7^{\circ} 49' -$	$7^{\circ} 0039 \, ds -$	$0^{\circ} 3638 \, d\pi +$	$78^{\circ} 1240 \, \text{r} \, dv$
	$- 0^{\circ} 3808 \, di +$	$0^{\circ} 0349 \, d\varphi +$	$17^{\circ} 6500 \, \text{r} \, dn$	
$0 = +$	$149^{\circ} 17' +$	$0^{\circ} 0536 \, ds +$	$0^{\circ} 0307 \, d\pi -$	$0^{\circ} 3808 \, \text{r} \, dv$
	$+ 13^{\circ} 3334 \, di +$	$0^{\circ} 1042 \, d\varphi +$	$2^{\circ} 2929 \, \text{r} \, dn$	
$0 = -$	$281^{\circ} 00' +$	$2^{\circ} 7982 \, ds +$	$0^{\circ} 3719 \, d\pi +$	$0^{\circ} 0349 \, \text{r} \, dv$
	$+ 0^{\circ} 1042 \, di +$	$58^{\circ} 0289 \, d\varphi -$	$76^{\circ} 1310 \, \text{r} \, dn$	
$0 = +$	$12811^{\circ} 39' -$	$45^{\circ} 0302 \, ds -$	$21^{\circ} 6710 \, d\pi +$	$17^{\circ} 6500 \, \text{r} \, dv$
	$+ 2^{\circ} 2929 \, di -$	$76^{\circ} 1310 \, d\varphi +$	$5857^{\circ} 9501 \, \text{r} \, dn$	

The solution of which, leads to the following correction of the Elements :—

$$\begin{aligned} ds &= -62.13 + d\pi.t \\ d\omega &= +50.63 \\ dv &= -49.42 \\ di &= -10.82 \\ d\varphi &= +4.39 \\ d\pi &= -0.024011 \end{aligned}$$

t being the number of days from 1848, December 23.0, M.T. at Greenwich.

The residual errors are :—

Date.	$\cos \delta \, da$	$d \delta$	Date.	$\cos \delta \, da$	$d \delta$
1841 March 20	+ 5.78	- 1.84	1848 December 23	- 7.90	- 2.39
1842 June 9	- 2.93	- 2.21	1850 April 18	- 1.13	- 0.49
1843 August 17	- 3.92	+ 0.38	1851 June 22	- 0.05	+ 0.94
1845 February 5	+ 5.53	+ 0.78	1852 September 12	+ 10.10	+ 0.98
1846 April 24	+ 4.68	+ 1.39	1854 March 27	- 4.13	- 0.07
1847 July 19	- 3.08	- 0.95	1855 April 25	- 3.06	- 0.62

- ① Vesta, from the Elements in page viii of the Preface to the NAUTICAL ALMANAC for 1855, with perturbations as for Ceres.
- ② Astræa, from the elements in page 596 of the NAUTICAL ALMANAC for 1856, with the addition of perturbations by Venus, the Earth, Mars, Jupiter, and Saturn, computed by Mr. Farley.
- ③ Hebe, from the elements in the *Berliner Astron. Jahrbuch* for 1857.
- ④ Iris, ditto ditto.
- ⑤ Flora, from Dr. Brünnow's *Tafeln der Flora*, Berlin 1855.
- ⑥ Metis, from the elements in the *Astronomische Nachrichten*, No. 977, col. 270.
- ⑦ Hygeia, from the elements in the *Berliner Astron. Jahrbuch* for 1857.
- ⑧ Parthenope, from elements obligingly communicated to the Superintendent by Dr. Luther.
- ⑨ Victoria, from the elements in the *Berliner Astron. Jahrbuch* for 1857.
- ⑩ Egeria, ditto ditto.
- ⑪ Irene, from the elements in the *Astronomische Nachrichten*, No. 928. col. 250.
- ⑫ Eunomia, ditto ditto, No. 952. col. 250.
- ⑬ Psyche, ditto ditto, No. 982. col. 351.
- ⑭ Thetis, from the elements in page 572 of the NAUTICAL ALMANAC for 1858, but referred to 1853, August 23.0 M. T. at Greenwich, with the addition of perturbations from that Epoch, by Venus, the Earth, Mars, Jupiter and Saturn, computed by Mr. Farley.

- ⑭ Melpomene, from the elements in the *Astronomische Nachrichten*, No. 949. col. 201.
- ⑮ Fortuna, ditto ditto, No. 848. col. 125.
- ⑯ Massilia, from the elements in the *Astronomische Nachrichten*, No. 988. col. 52.
- ⑰ Lutetia, from the elements in the *Berliner Astron. Jahrbuch* for 1857, with the addition of perturbations by Venus, the Earth, Mars, Jupiter and Saturn, computed by Mr. Farley.
- ⑱ Calliope, from the elements in the *Astronomische Nachrichten*, No. 951. col. 234.
- ⑲ Thalia, from the elements in the *Berliner Astron. Jahrbuch* for 1857.
- ⑳ Themis, from the elements in the *Astronomische Nachrichten*, No. 947. col. 181.
- ㉑ Phoebe, from the elements in the *Berliner Astron. Jahrbuch* for 1857.
- ㉒ Proserpine, ditto ditto.
- ㉓ Euterpe, from the elements in the *Astronomische Nachrichten*, No. 928. col. 247.
- ㉔ Bellona, ditto ditto, No. 949. col. 211.
- ㉕ Amphitrite, from the elements in *Comptes Rendus*, t. xxxix, No. 22, with the addition of perturbations by Jupiter and Saturn, computed by Mr. Farley.
- ㉖ Urania, from the elements in the *Astronomische Nachrichten*, No. 953. col. 267.
- ㉗ Euphrosyne, from the elements in the *Astronomische Nachrichten*, No. 979. col. 294.
- ㉘ Pomona, from the elements in the *Astronomische Nachrichten*, No. 984. col. 374., with the addition of perturbations by Jupiter and Saturn, computed by Mr. Farley.
- ㉙ Polyhymnia, from the elements in the *Astronomische Nachrichten*, No. 982. col. 59.

The Ephemeris of Neptune has been computed from the elements in page 596 of the NAUTICAL ALMANAC for 1856, the perturbations of true Anomaly and Radius Vector having been deduced, as before, from Professor PIERCE's formula.

	① CERES. 1857, Feb. 15° 0 M. T. at Greenwich.	② PALLAS. 1857, Jan. 22° 0 M. T. at Greenwich.	③ JUNO. 1856, Aug. 7° 0 M. T. at Greenwich.	④ VESTA. 1856, Dec. 17° 0 M. T. at Greenwich.
α	146° 44' 35.9	119° 18' 7.5	342° 0' 39.9	84° 44' 35.5
ω	149° 25' 39.1	122° 5' 26.9	54° 9' 40.9	250° 46' 29.5
ν	80° 48' 24.6	172° 38' 28.5	170° 57' 46.4	103° 22' 4.6
i	10° 36' 28.2	34° 42' 41.3	13° 3' 21.3	7° 8' 15.6
φ	4° 33' 38.6	13° 50' 4.4	14° 51' 53.1	5° 10' 26.0
π	771° 08387	769° 81417	813° 91494	978° 28522
log. α	0° 4419372	0° 4424143	0° 4262856	0° 3730279
δ	1857, Feb. 13 18 46	1857, Jan. 22 12 36	1856, Aug. 4 7 30	1856, Dec. 12 23 43
Intens. of Light }	1° 476	3° 103	1° 059	0° 620

	⑤ ASTREA. 1856, Aug. 7° 0 M. T. at Greenwich.	⑥ PARTHENOPE. 1856, May 23° 0 M. T. at Berlin.	⑦ THETIS. 1856, Apr. 21° 0 M. T. at Greenwich.
α	296° 53' 15.6	87° 38' 0.2	214° 30' 46.1
ω	135° 17' 46.3	316° 6' 5.0	259° 22' 44.4
ν	141° 30' 7.6	125° 2' 50.7	125° 25' 54.9
i	5° 19' 24.3	4° 37' 0.7	5° 35' 28.4
φ	10° 51' 15.4	5° 42' 39.1	7° 16' 59.4
π	858° 12078	924° 20216	912° 59262
log. α	0° 4109727	0° 3894930	0° 3931536

	⑧ LUTETIA. 1856, Nov. 23° 0 M. T. at Greenwich.	⑨ AMPHITRITE. 1856, Nov. 23° 0 M. T. at Greenwich.	⑩ POMONA. 1856, Feb. 9° 0 M. T. at Greenwich.
α	50° 26' 0.5	61° 50' 22.6	152° 16' 11.7
ω	326° 32' 45.7	56° 15' 57.0	195° 56' 20.1
ν	80° 29' 5.6	356° 24' 31.7	220° 48' 33.3
i	3° 5' 21.5	6° 7' 43.0	5° 29' 11.1
φ	9° 20' 53.8	4° 10' 8.6	4° 41' 46.2
π	934° 29544	869° 22900	854° 31580
log. α	0° 3863488	0° 4072488	0° 4122593

The Longitudes are reckoned from the Mean Equinoxes of the respective epochs.

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1855, Dec. 29	h m 2 3·2	N. 5 12'	0·3527	h m 7 32·5	° ' S. 5 34		0·4454
1856. Jan. 2	2 3·9	5 36	0·3621	7 17·5	50 20	5 26	0·4449
6	2 5·0	6 2	0·3713	7 2·9	51 10	5 18	0·4444
10	2 6·4	6 28	0·3804	6 48·6	52 1	5 9	0·4439
14	2 8·2	6 56	0·3896	6 34·7	52 51	5 0	0·4434
18	2 10·3	7 25	0·3986	6 21·1	53 41	4 52	0·4429
22	2 12·7	7 54	0·4075	6 7·7	54 32	4 44	0·4423
26	2 15·4	8 24	0·4163	5 54·7	55 22	4 36	0·4418
30	2 18·4	8 55	0·4249	5 42·0	56 13	4 28	0·4413
Feb. 3	2 21·6	9 28	0·4332	5 29·5	57 4	4 19	0·4408
7	2 25·1	10 1	0·4413	5 17·2	57 55	4 10	0·4403
11	2 28·9	10 34	0·4492	5 5·3	58 46	4 1	0·4397
15	2 32·9	11 7	0·4568	4 53·6	59 38	3 52	0·4392
19	2 37·1	11 41	0·4642	4 42·1	60 29	3 43	0·4387
23	2 41·5	12 15	0·4713	4 30·8	61 20	3 34	0·4382
27	2 46·2	12 48	0·4783	4 19·6	62 12	3 25	0·4377
March 2	2 51·0	13 22	0·4849	4 8·7	63 3	3 16	0·4372
6	2 56·0	13 55	0·4913	3 58·0	63 55	3 7	0·4367
10	3 1·2	14 28	0·4973	3 47·4	64 47	2 58	0·4361
14	3 6·5	15 1	0·5031	3 36·9	65 39	2 49	0·4356
18	3 12·0	15 33	0·5086	3 26·6	66 31	2 39	0·4351
22	3 17·6	16 5	0·5138	3 16·5	67 23	2 29	0·4346
26	3 23·3	16 37	0·5188	3 6·6	68 15	2 19	0·4340
30	3 29·2	17 8	0·5235	2 56·8	69 7	2 10	0·4335
April 3	3 35·2	17 38	0·5279	2 47·0	70 0	2 1	0·4330
7	3 41·4	18 8	0·5321	2 37·4	70 53	1 51	0·4325
11	3 47·7	18 37	0·5360	2 27·9	71 46	1 41	0·4320
15	3 54·0	19 6	0·5396	2 18·5	72 38	1 32	0·4315
19	4 0·5	19 33	0·5430	2 9·2	73 31	1 22	0·4310
23	4 7·1	19 59	0·5461	2 0·0	74 24	1 12	0·4304
27	4 13·7	20 25	0·5490	1 51·0	75 18	1 2	0·4299
May 1	4 20·5	20 50	0·5516	1 42·0	76 12	0 52	0·4294
5	4 27·4	21 14	0·5540	1 33·1	77 5	0 42	0·4289
9	4 34·3	21 36	0·5562	1 24·3	77 58	0 32	0·4284
13	4 41·3	21 57	0·5581	1 15·5	78 51	0 22	0·4279
17	4 48·4	22 17	0·5597	1 6·8	79 45	0 12	0·4274
21	4 55·6	22 37	0·5611	0 58·2	80 39	S. 0 2	0·4269
25	5 2·8	22 55	0·5623	0 49·7	81 33	N. 0 9	0·4264
29	5 10·1	23 12	0·5632	0 41·2	82 27	0 19	0·4259
June 2	5 17·5	23 27	0·5639	0 32·9	83 22	0 29	0·4254
6	5 24·9	23 41	0·5644	0 24·5	84 17	0 39	0·4249
10	5 32·3	N. 23 54	0·5646	0 16·2	85 11	N. 0 49	0·4244

MEAN TIME.

Month and Day.		Geocentric.				Heliocentric.		
		Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
		Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
June 10		h m 5 32.3	N.23 54	0.5646	h m 0 16.2	85 11	N.0 49	0.4244
	14	5 39.8	24 6	0.5646	17 7.9	86 5	0 59	0.4239
	18	5 47.3	24 16	0.5644	23 57.6	87 0	1 10	0.4234
	22	5 54.8	24 25	0.5639	23 49.4	87 55	1 20	0.4229
	26	6 2.4	24 33	0.5632	23 41.2	88 50	1 30	0.4225
	30	6 10.0	24 39	0.5623	23 33.0	89 45	1 40	0.4221
July 4		6 17.6	24 44	0.5611	23 24.8	90 40	1 50	0.4216
	8	6 25.2	24 48	0.5598	23 16.7	91 36	2 0	0.4211
	12	6 32.8	24 50	0.5582	23 8.5	92 31	2 11	0.4206
	16	6 40.4	24 51	0.5563	23 0.3	93 27	2 21	0.4202
	20	6 48.0	24 51	0.5542	22 52.2	94 23	2 31	0.4198
	24	6 55.6	24 50	0.5519	22 44.0	95 19	2 41	0.4193
	28	7 3.2	24 48	0.5494	22 35.8	96 15	2 51	0.4188
August 1		7 10.7	24 44	0.5466	22 27.7	97 12	3 1	0.4184
	5	7 18.2	24 39	0.5436	22 19.4	98 9	3 11	0.4180
	9	7 25.7	24 33	0.5404	22 11.1	99 5	3 21	0.4176
	13	7 33.2	24 27	0.5369	22 2.8	100 1	3 31	0.4172
	17	7 40.6	24 19	0.5332	21 54.4	100 58	3 41	0.4168
	21	7 47.9	24 10	0.5292	21 46.0	101 55	3 51	0.4164
	25	7 55.2	24 1	0.5250	21 37.5	102 52	4 1	0.4160
	29	8 2.4	23 51	0.5205	21 29.0	103 49	4 11	0.4156
Sept. 2		8 9.6	23 40	0.5158	21 20.4	104 46	4 21	0.4152
	6	8 16.7	23 28	0.5108	21 11.7	105 43	4 31	0.4148
	10	8 23.7	23 15	0.5056	21 3.0	106 40	4 41	0.4144
	14	8 30.6	23 2	0.5001	20 54.2	107 38	4 50	0.4140
	18	8 37.5	22 50	0.4944	20 45.2	108 36	4 59	0.4137
	22	8 44.2	22 37	0.4884	20 36.2	109 34	5 8	0.4133
	26	8 50.9	22 23	0.4821	20 27.1	110 32	5 18	0.4130
	30	8 57.4	22 9	0.4756	20 17.8	111 30	5 28	0.4127
Oct. 4		9 3.9	21 55	0.4688	20 8.4	112 28	5 37	0.4123
	8	9 10.2	21 42	0.4617	19 58.9	113 26	5 46	0.4120
	12	9 16.4	21 29	0.4544	19 49.4	114 25	5 55	0.4117
	16	9 22.4	21 16	0.4468	19 39.7	115 23	6 4	0.4114
	20	9 28.3	21 4	0.4389	19 29.8	116 22	6 13	0.4111
	24	9 34.0	20 53	0.4308	19 19.7	117 21	6 22	0.4108
	28	9 39.6	20 42	0.4224	19 9.5	118 20	6 31	0.4105
Nov. 1		9 45.0	20 32	0.4137	18 59.1	119 19	6 39	0.4102
	5	9 50.2	20 21	0.4048	18 48.6	120 18	6 47	0.4099
	9	9 55.3	20 17	0.3956	18 37.9	121 17	6 56	0.4096
	13	10 0.1	20 11	0.3862	18 26.9	122 16	7 4	0.4094
	17	10 4.6	20 7	0.3766	18 15.6	123 16	7 12	0.4092
	21	10 8.9	N.20 4	0.3668	18 4.1	124 15	N.7 20	0.4089

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Nov. 21	h m 10 8.9	N. 20 4	0.3668	h m 18 4.1	0 15	N. 7 20	0.4089
25	10 13.0	20 3	0.3568	17 52.4	125 15	7 28	0.4087
29	10 16.9	20 6	0.3466	17 40.4	126 15	7 36	0.4085
Dec. 3	10 20.4	20 10	0.3363	17 28.1	127 15	7 44	0.4083
7	10 23.6	20 16	0.3259	17 15.5	128 15	7 52	0.4081
11	10 26.4	20 24	0.3155	17 2.5	129 15	7 59	0.4079
15	10 28.9	20 35	0.3050	16 49.2	130 15	8 6	0.4077
19	10 31.0	20 49	0.2946	16 35.5	131 15	8 13	0.4075
23	10 32.8	21 6	0.2843	16 21.5	132 16	8 20	0.4073
27	10 34.1	21 26	0.2741	16 7.0	133 16	8 27	0.4071
31	10 35.0	21 48	0.2642	15 52.1	134 17	8 34	0.4070
35	10 35.4	N. 22 13	0.2548	15 36.7	135 17	N. 8 40	0.4069

EPHEMERIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
November 21	h m s 10 9 32.38	+ 2.60	N. 20° 5' 19.5"	— 0.7"	3.7"
22	10 10 34.17	2.56	20 5 6.4	0.4	3.7
23	10 11 34.96	2.51	20 5 0.8	— 0.1	3.8
24	10 12 34.72	2.46	20 5 2.9	+ 0.2	3.8
25	10 13 33.45	2.42	20 5 12.9	0.6	3.8
26	10 14 31.12	2.38	20 5 30.8	0.9	3.8
27	10 15 27.72	2.33	20 5 56.8	1.2	3.8
28	10 16 23.25	2.28	20 6 31.0	1.6	3.9
29	10 17 17.63	2.24	20 7 13.7	1.9	3.9
30	10 18 10.91	2.19	20 8 4.8	2.3	3.9
December 1	10 19 3.05	2.15	20 9 4.6	2.7	3.9
2	10 19 54.04	2.10	20 10 13.1	3.0	4.0
3	10 20 43.86	2.05	20 11 30.5	3.4	4.0
4	10 21 32.49	2.00	20 12 56.9	3.8	4.0
5	10 22 19.91	1.95	20 14 32.3	4.1	4.0
6	10 23 6.11	1.90	20 16 16.9	4.5	4.0
7	10 23 51.07	1.85	20 18 10.9	4.9	4.1
8	10 24 34.77	1.80	20 20 14.2	5.3	4.1
9	10 25 17.20	1.74	20 22 27.0	5.7	4.1
10	10 25 58.33	1.68	20 24 49.4	6.1	4.1
11	10 26 38.15	1.63	20 27 21.5	6.5	4.1
12	10 27 16.64	1.58	20 30 3.4	6.9	4.2
13	10 27 53.78	1.52	20 32 55.2	7.4	4.2
14	10 28 29.54	1.46	20 35 56.9	7.8	4.2
15	10 29 3.90	1.40	20 39 8.7	8.2	4.3
16	10 29 36.85	1.34	20 42 30.5	8.6	4.3
17	10 30 8.38	1.28	20 46 2.6	9.0	4.3
18	10 30 38.44	1.22	20 49 45.0	9.5	4.3
19	10 31 7.02	1.16	20 53 37.6	9.9	4.4
20	10 31 34.10	1.10	20 57 40.6	10.3	4.4
21	10 31 59.67	1.03	21 1 53.9	10.8	4.4
22	10 32 23.70	0.96	21 6 17.6	11.2	4.4
23	10 32 46.17	0.90	21 10 51.7	11.6	4.4
24	10 33 7.05	0.84	21 15 36.1	12.0	4.4
25	10 33 26.34	0.77	21 20 30.9	12.5	4.5
26	10 33 44.02	0.70	21 25 35.9	12.9	4.5
27	10 34 0.07	0.63	21 30 51.2	13.3	4.5
28	10 34 14.49	0.56	21 36 16.5	13.8	4.6
29	10 34 27.25	0.50	21 41 51.9	14.2	4.6
30	10 34 38.34	0.43	21 47 37.1	14.6	4.6
31	10 34 47.76	0.36	21 53 32.1	15.0	4.7
32	10 34 55.49	+ 0.29	N. 21 59 36.7	+ 15.4	4.7

This Ephemeris will be continued in the Supplement to the Nautical Almanac for 1860.

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1855. Dec. 29	^h 23 ^m 26.9	[°] S. 13 ['] 2	0.4859	^h 4 ^m 57.0	[°] 6 12	[°] S. 9 14	0.4595
1856. Jan. 2	23 31.1	12 51	0.4921	4 45.4	6 52	9 40	0.4581
6	23 35.3	12 39	0.4982	4 33.8	7 31	10 6	0.4566
10	23 39.6	12 27	0.5040	4 22.3	8 11	10 32	0.4552
14	23 44.1	12 13	0.5095	4 11.2	8 50	10 57	0.4537
18	23 48.8	11 57	0.5147	4 0.2	9 30	11 23	0.4522
22	23 53.7	11 40	0.5195	3 49.2	10 12	11 49	0.4508
26	23 58.7	11 22	0.5240	3 38.4	10 53	12 15	0.4493
30	0 3.9	11 3	0.5282	3 27.8	11 35	12 41	0.4478
Feb. 3	0 9.1	10 44	0.5321	3 17.3	12 18	13 8	0.4463
7	0 14.5	10 24	0.5357	3 6.9	13 1	13 34	0.4448
11	0 20.0	10 3	0.5390	2 56.6	13 44	14 1	0.4432
15	0 25.5	9 41	0.5420	2 46.5	14 27	14 27	0.4417
19	0 31.2	9 19	0.5447	2 36.4	15 11	14 53	0.4401
23	0 37.0	8 57	0.5471	2 26.4	15 56	15 20	0.4386
27	0 42.8	8 34	0.5492	2 16.5	16 41	15 46	0.4370
March 2	0 48.7	8 11	0.5510	2 6.7	17 27	16 13	0.4354
6	0 54.7	7 48	0.5525	1 57.0	18 13	16 39	0.4338
10	1 0.9	7 25	0.5537	1 47.4	18 59	17 6	0.4322
14	1 7.1	7 2	0.5546	1 37.8	19 46	17 33	0.4306
18	1 13.4	6 39	0.5553	1 28.3	20 34	18 0	0.4290
22	1 19.8	6 17	0.5557	1 19.0	21 23	18 26	0.4273
26	1 26.2	5 54	0.5558	1 9.7	22 12	18 53	0.4256
30	1 32.7	5 32	0.5556	1 0.4	23 2	19 20	0.4240
April 3	1 39.2	5 10	0.5553	0 51.2	23 53	19 46	0.4223
7	1 45.8	4 49	0.5546	0 42.0	24 44	20 13	0.4206
11	1 52.5	4 28	0.5537	0 32.9	25 36	20 40	0.4190
15	1 59.3	4 8	0.5525	0 24.0	26 28	21 6	0.4173
19	2 6.1	3 49	0.5511	0 15.1	27 21	21 32	0.4156
23	2 13.0	3 30	0.5495	0 6.2	28 15	21 59	0.4139
27	2 20.0	3 12	0.5476	23 55.2	29 10	22 25	0.4122
May 1	2 27.0	2 55	0.5455	23 46.4	30 6	22 51	0.4105
5	2 34.1	2 39	0.5432	23 37.7	31 2	23 17	0.4088
9	2 41.2	2 24	0.5406	23 29.2	31 59	23 43	0.4070
13	2 48.3	2 10	0.5378	23 20.7	32 57	24 9	0.4053
17	2 55.5	1 58	0.5348	23 12.2	33 56	24 35	0.4036
21	3 2.9	1 47	0.5315	23 3.7	34 55	25 0	0.4018
25	3 10.3	1 37	0.5281	22 55.3	35 55	25 25	0.4001
29	3 17.7	1 29	0.5245	22 46.9	36 57	25 50	0.3984
June 2	3 25.1	1 22	0.5207	22 38.6	38 0	26 14	0.3966
6	3 32.6	1 17	0.5167	22 30.4	39 3	26 39	0.3949
10	3 40.1	S. 1 13	0.5125	22 22.1	40 7	S. 27 3	0.3931

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.			
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
June	10	h m 3 40.1	S. ° ' 1 13	0.5125	h m 22 22.1	° ' 40 7	S. ° ' 27 3	0.3931
	14	3 47.7	1 11	0.5081	22 13.9	41 13	27 27	0.3914
	18	3 55.3	1 11	0.5035	22 5.8	42 19	27 51	0.3897
	22	4 2.9	1 13	0.4988	21 57.6	43 26	28 14	0.3880
	26	4 10.5	1 16	0.4939	21 49.5	44 35	28 37	0.3862
	30	4 18.2	1 21	0.4888	21 41.4	45 44	28 59	0.3845
July	4	4 25.9	1 29	0.4836	21 33.3	46 54	29 21	0.3827
	8	4 33.6	1 39	0.4782	21 25.3	48 6	29 43	0.3810
	12	4 41.3	1 51	0.4727	21 17.2	49 19	30 4	0.3793
	16	4 49.0	2 5	0.4670	21 9.1	50 33	30 25	0.3776
	20	4 56.7	2 20	0.4612	21 1.1	51 47	30 45	0.3759
	24	5 4.4	2 38	0.4552	20 53.0	53 3	31 4	0.3742
Aug.	28	5 12.0	2 59	0.4491	20 44.9	54 20	31 23	0.3725
	1	5 19.6	3 22	0.4428	20 36.8	55 38	31 41	0.3709
	5	5 27.2	3 47	0.4364	20 28.6	56 57	31 59	0.3692
	9	5 34.8	4 14	0.4299	20 20.4	58 17	32 16	0.3676
	13	5 42.3	4 44	0.4233	20 12.1	59 39	32 32	0.3659
	17	5 49.8	5 16	0.4166	20 3.8	61 2	32 47	0.3643
Sept.	21	5 57.2	5 50	0.4098	19 55.4	62 26	33 1	0.3627
	25	6 4.4	6 25	0.4028	19 46.9	63 50	33 15	0.3611
	29	6 11.6	7 3	0.3957	19 38.3	65 16	33 28	0.3595
	2	6 18.7	7 44	0.3885	19 29.6	66 43	33 40	0.3580
	6	6 25.7	8 27	0.3813	19 20.9	68 10	33 51	0.3565
	10	6 32.5	9 12	0.3739	19 12.0	69 39	34 1	0.3550
Oct.	14	6 39.2	9 58	0.3664	19 3.0	71 9	34 10	0.3535
	18	6 45.9	10 46	0.3589	18 53.8	72 39	34 18	0.3520
	22	6 52.4	11 36	0.3513	18 44.5	74 10	34 25	0.3505
	26	6 58.7	12 28	0.3436	18 35.0	75 42	34 31	0.3491
	30	7 4.8	13 21	0.3357	18 25.2	77 16	34 36	0.3478
	4	7 10.7	14 15	0.3278	18 15.3	78 50	34 39	0.3464
Nov.	8	7 16.4	15 10	0.3198	18 5.2	80 24	34 41	0.3451
	12	7 21.8	16 7	0.3117	17 54.8	81 59	34 43	0.3438
	16	7 27.0	17 5	0.3035	17 44.2	83 35	34 43	0.3425
	20	7 31.9	18 3	0.2953	17 33.3	85 11	34 42	0.3413
	24	7 36.6	19 1	0.2870	17 22.2	86 48	34 39	0.3401
	28	7 40.9	20 0	0.2786	17 10.7	88 25	34 35	0.3389
Nov.	1	7 44.9	20 58	0.2701	16 58.9	90 2	34 29	0.3378
	5	7 48.6	21 56	0.2616	16 46.9	91 40	34 23	0.3367
	9	7 51.9	22 53	0.2530	16 34.4	93 18	34 15	0.3356
	13	7 54.8	23 49	0.2444	16 21.5	94 56	34 6	0.3346
	17	7 57.3	24 43	0.2359	16 8.2	96 35	33 55	0.3336
	21	7 59.4	S. 25 35	0.2273	15 54.5	98 13	S. 33 43	0.3327

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Nov. 21	h m 7 59.4	° ' / S. 25 35	0.2273	h m 15 54.5	° ' / 98 13	° ' / S. 33 43	0.3327
25	8 1.0	26 25	0.2187	15 40.3	99 51	33 30	0.3318
29	8 2.2	27 11	0.2101	15 25.6	101 29	33 15	0.3309
Dec. 3	8 2.9	27 54	0.2016	15 10.5	103 7	32 59	0.3301
7	8 3.1	28 33	0.1932	14 54.9	104 44	32 42	0.3293
11	8 2.8	29 7	0.1850	14 38.7	106 21	32 23	0.3286
15	8 1.9	29 36	0.1769	14 22.2	107 58	32 3	0.3280
19	8 0.6	29 58	0.1691	14 5.2	109 35	31 42	0.3274
23	7 59.0	30 14	0.1615	13 47.6	111 11	31 20	0.3268
27	7 56.8	30 23	0.1543	13 29.6	112 46	30 56	0.3263
31	7 54.3	30 23	0.1475	13 11.3	114 21	30 31	0.3258
35	7 51.5	S. 30 13	0.1412	12 52.8	115 55	S. 30 5	0.3253

EPHEMERIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
October 23	^h 7 ^m 36 ^s 15.20	+ 2.83	[°] 18 ['] 56 ["] 40.1	- 36.5	4.4
24	7 37 22.39	2.78	19 11 15.2	36.5	4.4
25	7 38 28.41	2.73	19 25 50.7	36.5	4.4
26	7 39 33.26	2.68	19 40 26.3	36.5	4.5
27	7 40 36.91	2.63	19 55 1.5	36.4	4.5
28	7 41 39.34	2.58	20 9 36.2	36.4	4.5
29	7 42 40.53	2.53	20 24 10.1	36.3	4.5
30	7 43 40.47	2.47	20 38 42.9	36.3	4.6
31	7 44 39.12	2.42	20 53 14.1	36.2	4.6
November 1	7 45 36.49	2.36	21 7 43.6	36.2	4.6
2	7 46 32.54	2.31	21 22 10.9	36.1	4.6
3	7 47 27.26	2.25	21 36 35.9	36.0	4.7
4	7 48 20.64	2.20	21 50 58.2	35.9	4.7
5	7 49 12.65	2.14	22 5 17.5	35.7	4.7
6	7 50 3.28	2.08	22 19 33.4	35.6	4.7
7	7 50 52.52	2.02	22 33 45.7	35.4	4.8
8	7 51 40.33	1.96	22 47 54.0	35.3	4.8
9	7 52 26.70	1.90	23 1 58.0	35.1	4.8
10	7 53 11.62	1.84	23 15 57.3	34.9	4.9
11	7 53 55.06	1.78	23 29 51.7	34.7	4.9
12	7 54 37.01	1.72	23 43 40.9	34.5	4.9
13	7 55 17.44	1.65	23 57 24.3	34.2	4.9
14	7 55 56.33	1.59	24 11 1.8	34.0	4.9
15	7 56 33.66	1.52	24 24 32.8	33.7	5.0
16	7 57 9.40	1.46	24 37 57.0	33.4	5.0
17	7 57 43.54	1.39	24 51 13.9	33.0	5.0
18	7 58 16.06	1.32	25 4 23.2	32.7	5.0
19	7 58 46.93	1.25	25 17 24.5	32.4	5.0
20	7 59 16.13	1.18	25 30 17.1	32.0	5.1
21	7 59 43.64	1.11	25 43 0.7	31.6	5.1
22	8 0 9.45	1.04	25 55 34.7	31.2	5.1
23	8 0 33.53	0.97	26 7 58.7	30.8	5.1
24	8 0 55.87	0.90	26 20 12.1	30.3	5.2
25	8 1 16.45	0.82	26 32 14.3	29.8	5.2
26	8 1 35.26	0.75	26 44 4.8	29.3	5.2
27	8 1 52.28	0.67	26 55 43.2	28.8	5.2
28	8 2 7.51	0.60	27 7 8.8	28.3	5.3
29	8 2 20.94	0.52	27 18 21.1	27.7	5.3
30	8 2 32.56	0.45	27 29 19.4	27.1	5.3
December 1	8 2 42.36	0.37	27 40 3.2	26.5	5.4
2	8 2 50.34	0.30	27 50 32.1	25.9	5.4
3	8 2 56.49	+ 0.22	S. 28 0 45.4	- 25.2	5.4

EPHEMERIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
December 3	^h 8 ^m 2 ^s 56.49	+ 0.22	S. 28° 0' 45".4	- 25".2	5".4
4	8 3 0.81	0.15	28 10 42.5	24.5	5.4
5	8 3 3.30	+ 0.07	28 20 23.0	23.8	5.5
6	8 3 3.96	- 0.01	28 29 46.2	23.1	5.5
7	8 3 2.79	0.09	28 38 51.6	22.3	5.5
8	8 2 59.79	0.16	28 47 38.6	21.6	5.5
9	8 2 54.96	0.24	28 56 6.6	20.8	5.6
10	8 2 48.30	0.32	29 4 15.0	19.9	5.6
11	8 2 39.83	0.40	29 12 3.2	19.1	5.6
12	8 2 29.54	0.47	29 19 30.8	18.2	5.6
13	8 2 17.46	0.55	29 26 36.9	17.3	5.7
14	8 2 3.57	0.62	29 33 20.9	16.4	5.7
15	8 1 47.91	0.69	29 39 42.2	15.4	5.7
16	8 1 30.47	0.76	29 45 40.2	14.4	5.7
17	8 1 11.28	0.84	29 51 14.2	13.4	5.8
18	8 0 50.35	0.91	29 56 23.6	12.4	5.8
19	8 0 27.70	0.98	30 1 7.6	11.3	5.8
20	8 0 3.38	1.05	30 5 25.6	10.2	5.8
21	7 59 37.39	1.11	30 9 16.9	9.1	5.9
22	7 59 9.79	1.18	30 12 40.8	7.9	5.9
23	7 58 40.61	1.24	30 15 36.7	6.7	5.9
24	7 58 9.87	1.31	30 18 3.9	5.5	5.9
25	7 57 37.63	1.37	30 20 1.8	4.3	6.0
26	7 57 3.94	1.43	30 21 29.7	3.0	6.0
27	7 56 28.84	1.49	30 22 27.1	1.7	6.0
28	7 55 52.40	1.55	30 22 53.4	- 0.4	6.0
29	7 55 14.67	1.60	30 22 48.1	+ 0.9	6.1
30	7 54 35.71	1.65	30 22 10.6	2.2	6.1
31	7 53 55.58	1.70	30 21 0.4	3.6	6.1
32	7 53 14.35	- 1.75	S. 30 19 17.2	+ 5.0	6.2

This Ephemeris will be continued in the Supplement to the Nautical Almanac for 1860.

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1855. Dec. 29	^h ^m 18 11.3	[°] ['] S. 13 38	0.6124	^h ^m 23 39.4	[°] ['] 271 22	[°] ['] N. 12 51	0.4963
1856. Jan. 2	18 17.4	13 36	0.6110	23 29.7	272 1	12 49	0.4954
6	18 23.4	13 33	0.6094	23 19.9	272 40	12 48	0.4944
10	18 29.4	13 30	0.6075	23 10.2	273 19	12 46	0.4934
14	18 35.4	13 25	0.6053	23 0.5	273 59	12 44	0.4925
18	18 41.4	13 18	0.6029	22 50.7	274 38	12 42	0.4915
22	18 47.4	13 10	0.6002	22 41.0	275 18	12 40	0.4905
26	18 53.4	13 2	0.5971	22 31.2	275 58	12 38	0.4894
30	18 59.3	12 52	0.5938	22 21.4	276 39	12 35	0.4884
Feb. 3	19 5.2	12 41	0.5902	22 11.5	277 19	12 33	0.4873
7	19 11.0	12 29	0.5863	22 1.5	277 59	12 30	0.4862
11	19 16.8	12 16	0.5821	21 51.5	278 40	12 28	0.4851
15	19 22.5	12 2	0.5777	21 41.5	279 21	12 25	0.4840
19	19 28.2	11 47	0.5729	21 31.4	280 2	12 22	0.4829
23	19 33.8	11 31	0.5679	21 21.2	280 44	12 19	0.4817
27	19 39.3	11 14	0.5626	21 11.0	281 25	12 16	0.4806
March 2	19 44.8	10 56	0.5570	21 0.7	282 7	12 12	0.4794
6	19 50.2	10 37	0.5511	20 50.3	282 49	12 9	0.4782
10	19 55.4	10 18	0.5449	20 39.8	283 31	12 5	0.4770
14	20 0.6	9 58	0.5384	20 29.2	284 14	12 2	0.4758
18	20 5.6	9 37	0.5316	20 18.5	284 56	11 58	0.4745
22	20 10.6	9 16	0.5246	20 7.6	285 39	11 54	0.4733
26	20 15.4	8 54	0.5172	19 56.7	286 22	11 50	0.4720
30	20 20.1	8 32	0.5096	19 45.6	287 6	11 46	0.4707
April 3	20 24.7	8 9	0.5017	19 34.4	287 49	11 42	0.4694
7	20 29.1	7 46	0.4935	19 23.0	288 33	11 37	0.4681
11	20 33.3	7 23	0.4850	19 11.5	289 17	11 33	0.4667
15	20 37.4	7 0	0.4763	18 59.8	290 1	11 28	0.4654
19	20 41.3	6 37	0.4673	18 47.9	290 46	11 23	0.4640
23	20 45.1	6 14	0.4580	18 35.8	291 31	11 18	0.4626
27	20 48.6	5 51	0.4484	18 23.6	292 16	11 13	0.4612
May 1	20 52.0	5 28	0.4386	18 11.2	293 1	11 7	0.4598
5	20 55.1	5 6	0.4286	17 58.6	293 47	11 2	0.4583
9	20 58.0	4 44	0.4184	17 45.7	294 33	10 56	0.4569
13	21 0.7	4 23	0.4079	17 32.6	295 19	10 51	0.4554
17	21 3.1	4 3	0.3972	17 19.2	296 5	10 45	0.4539
21	21 5.2	3 43	0.3864	17 5.5	296 52	10 39	0.4524
25	21 7.1	3 25	0.3755	16 51.6	297 39	10 32	0.4509
29	21 8.6	3 8	0.3644	16 37.3	298 26	10 26	0.4494
June 2	21 9.9	2 53	0.3532	16 22.8	299 14	10 19	0.4478
6	21 10.8	2 39	0.3420	16 8.0	300 2	10 13	0.4462
10	21 11.4	S. 2 27	0.3308	15 52.8	300 50	N. 10 6	0.4447

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
<div> <div>h m</div> <div>° '</div> </div>							
June 10	21 11.4	S. 2 27	0.3308	15 52.8	300 50	N. 10 6	0.4447
14	21 11.6	2 17	0.3196	15 37.2	301 39	9 59	0.4431
18	21 11.4	2 9	0.3086	15 21.3	302 28	9 51	0.4415
22	21 10.9	2 4	0.2978	15 5.0	303 17	9 44	0.4398
26	21 10.1	2 1	0.2872	14 48.4	304 7	9 36	0.4382
30	21 8.9	2 1	0.2769	14 31.4	304 57	9 29	0.4365
July 4	21 7.3	2 5	0.2670	14 14.1	305 47	9 21	0.4348
8	21 5.4	2 11	0.2577	13 56.4	306 38	9 13	0.4331
12	21 3.2	2 20	0.2490	13 38.4	307 29	9 4	0.4314
16	21 0.6	2 33	0.2410	13 20.1	308 20	8 56	0.4297
20	20 57.8	2 49	0.2337	13 1.5	309 12	8 47	0.4280
24	20 54.7	3 8	0.2273	12 42.7	310 4	8 38	0.4262
28	20 51.5	3 30	0.2219	12 23.7	310 56	8 29	0.4244
August 1	20 48.2	3 55	0.2176	12 4.6	311 49	8 20	0.4227
5	20 44.8	4 23	0.2144	11 45.5	312 42	8 11	0.4209
9	20 41.3	4 53	0.2122	11 26.4	313 36	8 1	0.4191
13	20 37.9	5 24	0.2112	11 7.3	314 30	7 51	0.4172
17	20 34.7	5 57	0.2113	10 48.4	315 25	7 41	0.4154
21	20 31.7	6 32	0.2125	10 29.7	316 20	7 31	0.4136
25	20 28.9	7 7	0.2148	10 11.2	317 15	7 20	0.4117
29	20 26.4	7 42	0.2180	9 53.0	318 11	7 10	0.4098
Sept. 2	20 24.2	8 17	0.2222	9 35.2	319 7	6 59	0.4079
6	20 22.4	8 51	0.2272	9 17.7	320 3	6 48	0.4060
10	20 21.1	9 24	0.2329	9 0.7	321 1	6 36	0.4041
14	20 20.2	9 56	0.2393	8 44.1	321 58	6 25	0.4022
18	20 19.7	10 27	0.2463	8 28.0	322 56	6 13	0.4003
22	20 19.7	10 56	0.2537	8 12.3	323 55	6 1	0.3984
26	20 20.2	11 23	0.2614	7 57.1	324 54	5 49	0.3964
30	20 21.1	11 48	0.2695	7 42.3	325 53	5 37	0.3945
Oct. 4	20 22.5	12 11	0.2778	7 28.0	326 53	5 25	0.3925
8	20 24.3	12 32	0.2862	7 14.1	327 54	5 12	0.3906
12	20 26.5	12 50	0.2947	7 0.6	328 55	4 59	0.3886
16	20 29.2	13 6	0.3032	6 47.5	329 57	4 46	0.3866
20	20 32.2	13 20	0.3117	6 34.8	330 59	4 32	0.3846
24	20 35.6	13 31	0.3201	6 22.5	332 1	4 19	0.3826
28	20 39.3	13 40	0.3285	6 10.5	333 4	4 5	0.3806
Nov. 1	20 43.4	13 47	0.3367	5 58.8	334 8	3 51	0.3786
5	20 47.8	13 52	0.3447	5 47.5	335 12	3 37	0.3766
9	20 52.5	13 54	0.3526	5 36.5	336 17	3 22	0.3746
13	20 57.5	13 53	0.3603	5 25.7	337 22	3 8	0.3726
17	21 2.7	13 51	0.3677	5 15.2	338 28	2 53	0.3706
21	21 8.2	13 47	0.3750	5 4.0	339 33	2 38	0.3686

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Nov. 21	^h 21 ^m 8 [.] 1	S. 13 47	0 [.] 3749	^h 5 ^m 4 [.] 9	^o 339 ['] 34	N. 2 38	0 [.] 3686
25	21 13 [.] 8	13 40	0 [.] 3819	4 54 [.] 8	340 41	2 22	0 [.] 3666
29	21 19 [.] 7	13 31	0 [.] 3887	4 45 [.] 0	341 49	2 7	0 [.] 3646
Dec. 3	21 25 [.] 8	13 19	0 [.] 3952	4 35 [.] 4	342 57	1 51	0 [.] 3626
7	21 32 [.] 1	13 6	0 [.] 4015	4 25 [.] 9	344 6	1 35	0 [.] 3606
11	21 38 [.] 6	12 51	0 [.] 4075	4 16 [.] 6	345 16	1 19	0 [.] 3586
15	21 45 [.] 2	12 34	0 [.] 4133	4 7 [.] 5	346 26	1 3	0 [.] 3566
19	21 51 [.] 9	12 15	0 [.] 4188	3 58 [.] 5	347 37	0 47	0 [.] 3546
23	21 58 [.] 8	11 54	0 [.] 4240	3 49 [.] 6	348 48	0 30	0 [.] 3527
27	22 5 [.] 8	11 31	0 [.] 4290	3 40 [.] 9	350 0	N. 0 14	0 [.] 3509
31	22 12 [.] 9	11 6	0 [.] 4338	3 32 [.] 2	351 13	S. 0 3	0 [.] 3490
35	22 20 [.] 2	S. 10 40	0 [.] 4382	3 23 [.] 7	352 26	S. 0 20	0 [.] 3469

EPHEMERIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
May					
4	^h 20 ^m 54 ^s 46.03	+ 1.89	S. 5° 7' 31".1	+ 13.8	3.2
5	20 55 30.90	1.85	5 2 2.0	13.7	3.2
6	20 56 14.90	1.82	4 56 35.0	13.6	3.2
7	20 56 58.02	1.78	4 51 10.2	13.5	3.3
8	20 57 40.25	1.74	4 45 47.7	13.4	3.3
9	20 58 21.58	1.70	4 40 27.8	13.3	3.3
10	20 59 1.99	1.67	4 35 10.5	13.2	3.3
11	20 59 41.48	1.63	4 29 55.9	13.1	3.3
12	21 0 20.04	1.59	4 24 44.3	12.9	3.4
13	21 0 57.65	1.55	4 19 35.6	12.8	3.4
14	21 1 34.30	1.51	4 14 30.0	12.7	3.4
15	21 2 9.99	1.47	4 9 27.7	12.5	3.4
16	21 2 44.70	1.43	4 4 28.7	12.4	3.4
17	21 3 18.42	1.38	3 59 33.2	12.2	3.5
18	21 3 51.13	1.34	3 54 41.4	12.1	3.5
19	21 4 22.83	1.30	3 49 53.3	11.9	3.5
20	21 4 53.50	1.26	3 45 9.1	11.8	3.5
21	21 5 23.12	1.21	3 40 29.0	11.6	3.5
22	21 5 51.69	1.17	3 35 53.1	11.4	3.6
23	21 6 19.18	1.12	3 31 21.5	11.2	3.6
24	21 6 45.59	1.08	3 26 54.5	11.0	3.6
25	21 7 10.89	1.03	3 22 32.2	10.8	3.6
26	21 7 35.07	0.98	3 18 14.8	10.6	3.7
27	21 7 58.13	0.94	3 14 2.4	10.4	3.7
28	21 8 20.03	0.89	3 9 55.2	10.2	3.7
29	21 8 40.76	0.84	3 5 53.3	10.0	3.7
30	21 9 0.32	0.79	3 1 57.0	9.7	3.7
31	21 9 18.70	0.74	2 58 6.5	9.5	3.8
June					
1	21 9 35.88	0.69	2 54 22.0	9.2	3.8
2	21 9 51.84	0.64	2 50 43.6	9.0	3.8
3	21 10 6.57	0.59	2 47 11.5	8.7	3.8
4	21 10 20.07	0.54	2 43 45.9	8.4	3.9
5	21 10 32.32	0.48	2 40 27.0	8.1	3.9
6	21 10 43.32	0.43	2 37 14.9	7.9	3.9
7	21 10 53.05	0.38	2 34 9.9	7.6	3.9
8	21 11 1.50	0.33	2 31 12.1	7.3	4.0
9	21 11 8.68	0.27	2 28 21.7	6.9	4.0
10	21 11 14.56	0.22	2 25 38.8	6.6	4.0
11	21 11 19.14	0.16	2 23 3.6	6.3	4.0
12	21 11 22.42	0.11	2 20 36.4	6.0	4.1
13	21 11 24.39	+ 0.05	2 18 17.2	5.6	4.1
14	21 11 25.04	0.00	S. 2 16 6.3	+ 5.3	4.1

EPHEMERIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
June 14	^{h m s} 21 11 25 ^o 04	^s 0 ^o 00	S. 2 16 6 ^o 3	^{''} + 5 ^{''} 3	^{''} 4 ^{''} 1
15	21 11 24 ^o 36	- 0 ^o 06	2 14 3 ^o 8	4 ^{''} 9	4 ^{''} 2
16	21 11 22 ^o 35	0 ^o 11	2 12 9 ^o 8	4 ^{''} 6	4 ^{''} 2
17	21 11 19 ^o 00	0 ^o 17	2 10 24 ^o 6	4 ^{''} 2	4 ^{''} 2
18	21 11 14 ^o 30	0 ^o 22	2 8 48 ^o 4	3 ^{''} 8	4 ^{''} 2
19	21 11 8 ^o 24	0 ^o 28	2 7 21 ^o 2	3 ^{''} 4	4 ^{''} 3
20	21 11 0 ^o 83	0 ^o 34	2 6 3 ^o 4	3 ^{''} 0	4 ^{''} 3
21	21 10 52 ^o 05	0 ^o 39	2 4 55 ^o 1	2 ^{''} 6	4 ^{''} 3
22	21 10 41 ^o 90	0 ^o 45	2 3 56 ^o 4	2 ^{''} 2	4 ^{''} 3
23	21 10 30 ^o 38	0 ^o 51	2 3 7 ^o 6	1 ^{''} 8	4 ^{''} 4
24	21 10 17 ^o 48	0 ^o 57	2 2 28 ^o 8	1 ^{''} 4	4 ^{''} 4
25	21 10 3 ^o 21	0 ^o 62	2 2 0 ^o 3	1 ^{''} 0	4 ^{''} 4
26	21 9 47 ^o 56	0 ^o 68	2 1 42 ^o 2	0 ^{''} 5	4 ^{''} 4
27	21 9 30 ^o 53	0 ^o 74	2 1 34 ^o 7	+ 0 ^{''} 1	4 ^{''} 5
28	21 9 12 ^o 14	0 ^o 79	2 1 37 ^o 9	- 0 ^{''} 4	4 ^{''} 5
29	21 8 52 ^o 38	0 ^o 85	2 1 52 ^o 1	0 ^{''} 8	4 ^{''} 5
30	21 8 31 ^o 27	0 ^o 91	2 2 17 ^o 4	1 ^{''} 3	4 ^{''} 6
July 1	21 8 8 ^o 81	0 ^o 96	2 2 53 ^o 9	1 ^{''} 8	4 ^{''} 6
2	21 7 45 ^o 02	1 ^o 02	2 3 41 ^o 8	2 ^{''} 2	4 ^{''} 6
3	21 7 19 ^o 90	1 ^o 07	2 4 41 ^o 2	2 ^{''} 7	4 ^{''} 6
4	21 6 53 ^o 47	1 ^o 13	2 5 52 ^o 3	3 ^{''} 2	4 ^{''} 7
5	21 6 25 ^o 75	1 ^o 18	2 7 15 ^o 0	3 ^{''} 7	4 ^{''} 7
6	21 5 56 ^o 76	1 ^o 23	2 8 49 ^o 5	4 ^{''} 2	4 ^{''} 7
7	21 5 26 ^o 52	1 ^o 29	2 10 35 ^o 8	4 ^{''} 7	4 ^{''} 7
8	21 4 55 ^o 04	1 ^o 34	2 12 34 ^o 1	5 ^{''} 2	4 ^{''} 8
9	21 4 22 ^o 37	1 ^o 38	2 14 44 ^o 3	5 ^{''} 7	4 ^{''} 8
10	21 3 48 ^o 51	1 ^o 43	2 17 6 ^o 5	6 ^{''} 2	4 ^{''} 8
11	21 3 13 ^o 49	1 ^o 48	2 19 40 ^o 8	6 ^{''} 7	4 ^{''} 8
12	21 2 37 ^o 33	1 ^o 53	2 22 27 ^o 1	7 ^{''} 2	4 ^{''} 8
13	21 2 0 ^o 07	1 ^o 57	2 25 25 ^o 5	7 ^{''} 7	4 ^{''} 9
14	21 1 21 ^o 74	1 ^o 62	2 28 36 ^o 0	8 ^{''} 2	4 ^{''} 9
15	21 0 42 ^o 35	1 ^o 66	2 31 58 ^o 5	8 ^{''} 7	4 ^{''} 9
16	21 0 1 ^o 95	1 ^o 70	2 35 33 ^o 0	9 ^{''} 2	4 ^{''} 9
17	20 59 20 ^o 57	1 ^o 74	2 39 19 ^o 6	9 ^{''} 7	5 ^{''} 0
18	20 58 38 ^o 24	1 ^o 78	2 43 18 ^o 2	10 ^{''} 2	5 ^{''} 0
19	20 57 55 ^o 00	1 ^o 82	2 47 28 ^o 8	10 ^{''} 7	5 ^{''} 0
20	20 57 10 ^o 88	1 ^o 86	2 51 51 ^o 2	11 ^{''} 2	5 ^{''} 0
21	20 56 25 ^o 92	1 ^o 89	2 56 25 ^o 4	11 ^{''} 7	5 ^{''} 0
22	20 55 40 ^o 16	1 ^o 92	3 1 11 ^o 4	12 ^{''} 2	5 ^{''} 1
23	20 54 53 ^o 66	1 ^o 95	3 6 9 ^o 0	12 ^{''} 6	5 ^{''} 1
24	20 54 6 ^o 45	1 ^o 98	3 11 18 ^o 0	13 ^{''} 1	5 ^{''} 1
25	20 53 18 ^o 57	- 2 ^o 01	S. 3 16 38 ^o 4	- 13 ^{''} 6	5 ^{''} 1

EPHEMERIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Month and Day.		Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
July	25	^{h m s} 20 53 18.57	^s - 2.01	^{° ' "} S. 3 16 38.4	["] - 13.6	["] 5.1
	26	20 52 30.09	2.03	3 22 10.1	14.0	5.1
	27	20 51 41.05	2.05	3 27 52.7	14.5	5.1
	28	20 50 51.50	2.07	3 33 46.2	15.0	5.2
	29	20 50 1.50	2.09	3 39 50.3	15.4	5.2
	30	20 49 11.11	2.11	3 46 4.8	15.8	5.2
	31	20 48 20.39	2.12	3 52 29.5	16.2	5.2
August	1	20 47 29.39	2.13	3 59 4.0	16.6	5.2
	2	20 46 38.19	2.14	4 5 48.2	17.0	5.2
	3	20 45 46.84	2.14	4 12 41.7	17.4	5.2
	♂ 4	20 44 55.40	2.14	4 19 44.1	17.8	5.2
	5	20 44 3.93	2.14	4 26 55.1	18.1	5.2
	6	20 43 12.50	2.14	4 34 14.4	18.5	5.2
	7	20 42 21.16	2.14	4 41 41.6	18.8	5.3
	8	20 41 29.99	2.13	4 49 16.4	19.1	5.3
	9	20 40 39.05	2.12	4 56 58.4	19.4	5.3
	10	20 39 48.38	2.10	5 4 47.1	19.7	5.3
	11	20 38 58.05	2.09	5 12 42.3	19.9	5.3
	12	20 38 8.12	2.07	5 20 43.5	20.2	5.3
	13	20 37 18.64	2.05	5 28 50.4	20.4	5.3
	14	20 36 29.68	2.03	5 37 2.5	20.6	5.3
	15	20 35 41.28	2.00	5 45 19.5	20.8	5.3
	16	20 34 53.51	1.98	5 53 41.0	21.0	5.3
	17	20 34 6.42	1.95	6 2 6.6	21.1	5.3
	18	20 33 20.06	1.92	6 10 36.0	21.3	5.3
	19	20 32 34.49	1.88	6 19 8.6	21.4	5.3
	20	20 31 49.75	1.85	6 27 44.2	21.5	5.3
	21	20 31 5.90	1.81	6 36 22.3	21.6	5.3
	22	20 30 23.00	1.77	6 45 2.6	21.7	5.2
	23	20 29 41.09	1.72	6 53 44.7	21.8	5.2
	24	20 29 0.23	1.68	7 2 28.1	21.8	5.2
	25	20 28 20.47	1.63	7 11 12.5	21.9	5.2
	26	20 27 41.84	1.58	7 19 57.5	21.9	5.2
	27	20 27 4.41	1.53	7 28 42.6	21.9	5.2
	28	20 26 28.20	1.48	7 37 27.6	21.9	5.2
	29	20 25 53.27	1.43	7 46 12.0	21.8	5.2
	30	20 25 19.67	1.37	7 54 55.3	21.8	5.2
	31	20 24 47.42	1.31	8 3 37.4	21.7	5.2
September	1	20 24 16.57	1.26	8 12 17.6	21.6	5.1
	2	20 23 47.16	1.20	8 20 55.8	21.5	5.1
	3	20 23 19.20	1.13	8 29 31.6	21.4	5.1
	4	20 22 52.74	- 1.07	S. 8 38 4.5	- 21.3	5.1

EPHEMERIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
September	^h ^m ^s	^s	[°] ['] ["]	["]	["]
4	20 22 52.74	- 1.07	S. 8 38 4.5	- 21.3	5.1
5	20 22 27.81	1.01	8 46 34.4	21.2	5.1
6	20 22 4.42	0.94	8 55 0.9	21.0	5.1
7	20 21 42.60	0.88	9 3 23.6	20.9	5.1
8	20 21 22.37	0.81	9 11 42.4	20.7	5.0
9	20 21 3.75	0.74	9 19 56.8	20.5	5.0
10	20 20 46.75	0.67	9 28 6.8	20.3	5.0
11	20 20 31.39	0.61	9 36 12.0	20.1	5.0
12	20 20 17.68	0.54	9 44 12.1	19.9	5.0
13	20 20 5.62	0.47	9 52 7.0	19.7	5.0
14	20 19 55.23	0.40	9 59 56.5	19.4	4.9
15	20 19 46.52	0.33	10 7 40.3	19.2	4.9
16	20 19 39.50	0.26	10 15 18.3	19.0	4.9
17	20 19 34.17	0.19	10 22 50.2	18.7	4.9
18	20 19 30.54	0.12	10 30 15.9	18.4	4.9
19	20 19 28.61	- 0.05	10 37 35.3	18.2	4.8
20	20 19 28.38	+ 0.03	10 44 48.1	17.9	4.8
21	20 19 29.86	0.10	10 51 54.3	17.6	4.8
22	20 19 33.06	0.17	10 58 53.6	17.3	4.8
23	20 19 37.97	0.24	11 5 45.9	17.0	4.8
24	20 19 44.60	0.31	11 12 31.0	16.7	4.7
25	20 19 52.94	0.38	11 19 8.9	16.4	4.7
26	20 20 2.99	0.45	11 25 39.3	16.1	4.7
27	20 20 14.75	0.53	11 32 2.3	15.8	4.7
28	20 20 28.21	0.60	11 38 17.5	15.5	4.6
29	20 20 43.37	0.67	11 44 24.9	15.1	4.6
30	20 21 0.23	0.74	11 50 24.5	14.8	4.6
October					
1	20 21 18.76	0.81	11 56 16.0	14.5	4.6
2	20 21 38.97	0.88	12 1 59.5	14.1	4.6
3	20 22 0.84	0.95	12 7 34.8	13.8	4.5
4	20 22 24.35	1.01	12 13 1.9	13.5	4.5
5	20 22 49.50	1.08	12 18 20.7	13.1	4.5
6	20 23 16.28	1.15	12 23 31.1	12.8	4.5
7	20 23 44.66	1.22	12 28 33.1	12.4	4.5
8	20 24 14.63	1.28	12 33 26.7	12.1	4.4
9	20 24 46.17	1.35	12 38 11.8	11.7	4.4
10	20 25 19.27	1.41	12 42 48.4	11.3	4.4
11	20 25 53.90	1.47	12 47 16.5	11.0	4.4
12	20 26 30.06	1.54	12 51 35.9	10.6	4.3
13	20 27 7.73	1.60	12 55 46.9	10.3	4.3
14	20 27 46.89	1.66	12 59 49.2	9.9	4.3
15	20 28 27.52	+ 1.72	S. 13 3 42.9	- 9.6	4.3

EPHEMERIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Month and Day.	<i>Apparent Right Ascension.</i>	<i>Variation of Right Asc. in 1 Hour of Long.</i>	<i>Apparent Declination.</i>	<i>Variation of Declination in 1 Hour of Long.</i>	<i>Hor. Par.</i>
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>"</i>
October 15	20 28 27.52	+ 1.72	S. 13 3 42.9	- 9.6	4.3
16	20 29 9.60	1.78	13 7 28.0	9.2	4.3
17	20 29 53.12	1.84	13 11 4.5	8.8	4.2
18	20 30 38.07	1.90	13 14 32.3	8.5	4.2
19	20 31 24.42	1.96	13 17 51.5	8.1	4.2
20	20 32 12.16	2.02	13 21 1.9	7.8	4.2
21	20 33 1.28	2.08	13 24 3.8	7.4	4.2
22	20 33 51.77	2.13	13 26 56.9	7.0	4.1
23	20 34 43.60	2.19	13 29 41.3	6.7	4.1
24	20 35 36.76	2.24	13 32 17.0	6.3	4.1
25	20 36 31.25	2.30	13 34 43.8	5.9	4.1
26	20 37 27.03	2.35	13 37 1.9	5.6	4.0
27	20 38 24.10	2.40	13 39 11.3	5.2	4.0
28	20 39 22.43	2.46	13 41 11.8	4.8	4.0
29	20 40 22.01	2.51	13 43 3.6	4.5	4.0
30	20 41 22.82	2.56	13 44 46.7	4.1	4.0
31	20 42 24.84	2.61	13 46 21.0	3.7	4.0
November 1	20 43 28.05	2.66	13 47 46.6	3.4	3.9
2	20 44 32.44	2.71	13 49 3.5	3.0	3.9
3	20 45 37.98	2.75	13 50 11.6	2.7	3.9
4	20 46 44.65	+ 2.80	S. 13 51 11.1	- 2.3	3.9

MEAN TIME.							
Month and Day.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1855. Dec. 29	^h 22 ^m 46 [.] 1	[°] S. 14 ['] 23	0 [.] 4372	^h 4 ^m 16 [.] 2	[°] 358 27	[°] S. 6 54	0 [.] 3816
1856. Jan. 2	22 52 [.] 1	13 42	0 [.] 4447	4 6 [.] 5	359 29	6 56	0 [.] 3823
6	22 58 [.] 3	13 0	0 [.] 4520	3 56 [.] 9	0 32	6 58	0 [.] 3830
10	23 4 [.] 6	12 18	0 [.] 4589	3 47 [.] 4	1 34	6 59	0 [.] 3837
14	23 10 [.] 9	11 35	0 [.] 4655	3 38 [.] 0	2 36	7 1	0 [.] 3843
18	23 17 [.] 2	10 52	0 [.] 4719	3 28 [.] 5	3 38	7 2	0 [.] 3850
22	23 23 [.] 5	10 8	0 [.] 4780	3 19 [.] 1	4 40	7 3	0 [.] 3857
26	23 29 [.] 9	9 24	0 [.] 4838	3 9 [.] 7	5 42	7 4	0 [.] 3864
30	23 36 [.] 3	8 40	0 [.] 4893	3 0 [.] 4	6 44	7 5	0 [.] 3870
Feb. 3	23 42 [.] 8	7 55	0 [.] 4946	2 51 [.] 1	7 45	7 6	0 [.] 3877
7	23 49 [.] 3	7 10	0 [.] 4996	2 41 [.] 8	8 46	7 7	0 [.] 3883
11	23 55 [.] 8	6 25	0 [.] 5043	2 32 [.] 6	9 47	7 7	0 [.] 3890
15	0 2 [.] 3	5 39	0 [.] 5086	2 23 [.] 4	10 47	7 8	0 [.] 3896
19	0 8 [.] 9	4 54	0 [.] 5127	2 14 [.] 2	11 47	7 8	0 [.] 3902
23	0 15 [.] 5	4 9	0 [.] 5166	2 5 [.] 0	12 48	7 8	0 [.] 3908
27	0 22 [.] 1	3 23	0 [.] 5203	1 55 [.] 9	13 49	7 8	0 [.] 3914
March 2	0 28 [.] 7	2 38	0 [.] 5237	1 46 [.] 7	14 49	7 8	0 [.] 3920
6	0 35 [.] 3	1 53	0 [.] 5268	1 37 [.] 6	15 49	7 7	0 [.] 3926
10	0 42 [.] 0	1 7	0 [.] 5296	1 28 [.] 5	16 49	7 7	0 [.] 3931
14	0 48 [.] 6	S. 0 22	0 [.] 5322	1 19 [.] 4	17 48	7 7	0 [.] 3937
18	0 55 [.] 3	N. 0 22	0 [.] 5345	1 10 [.] 3	18 48	7 6	0 [.] 3943
22	1 2 [.] 0	1 6	0 [.] 5366	1 1 [.] 3	19 47	7 6	0 [.] 3948
26	1 8 [.] 7	1 49	0 [.] 5384	0 52 [.] 2	20 46	7 5	0 [.] 3954
30	1 15 [.] 4	2 32	0 [.] 5400	0 43 [.] 2	21 45	7 4	0 [.] 3959
April 3	1 22 [.] 2	3 14	0 [.] 5414	0 34 [.] 2	22 44	7 3	0 [.] 3965
7	1 28 [.] 9	3 56	0 [.] 5425	0 25 [.] 2	23 43	7 2	0 [.] 3970
11	1 35 [.] 7	4 37	0 [.] 5434	0 16 [.] 2	24 42	7 1	0 [.] 3975
15	1 42 [.] 5	5 17	0 [.] 5440	0 7 [.] 2	25 40	6 59	0 [.] 3980
19	1 49 [.] 2	5 57	0 [.] 5443	23 55 [.] 9	26 38	6 57	0 [.] 3985
23	1 56 [.] 0	6 36	0 [.] 5445	23 46 [.] 9	27 36	6 55	0 [.] 3990
27	2 2 [.] 8	7 15	0 [.] 5444	23 37 [.] 9	28 34	6 53	0 [.] 3994
May 1	2 9 [.] 5	7 53	0 [.] 5440	23 28 [.] 9	29 32	6 51	0 [.] 3999
5	2 16 [.] 2	8 29	0 [.] 5434	23 19 [.] 9	30 30	6 49	0 [.] 4004
9	2 23 [.] 1	9 4	0 [.] 5426	23 11 [.] 0	31 27	6 47	0 [.] 4008
13	2 29 [.] 9	9 38	0 [.] 5415	23 2 [.] 0	32 25	6 45	0 [.] 4012
17	2 36 [.] 7	10 12	0 [.] 5402	22 53 [.] 0	33 22	6 43	0 [.] 4017
21	2 43 [.] 5	10 45	0 [.] 5387	22 44 [.] 1	34 19	6 40	0 [.] 4021
25	2 50 [.] 3	11 17	0 [.] 5369	22 35 [.] 1	35 16	6 38	0 [.] 4025
29	2 57 [.] 1	11 48	0 [.] 5349	22 26 [.] 1	36 13	6 35	0 [.] 4029
June 2	3 3 [.] 8	12 17	0 [.] 5326	22 17 [.] 2	37 10	6 32	0 [.] 4033
6	3 10 [.] 6	12 45	0 [.] 5301	22 8 [.] 2	38 7	6 29	0 [.] 4037
10	3 17 [.] 3	N. 13 12	0 [.] 5274	21 59 [.] 1	39 4	S. 6 26	0 [.] 4041

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
June	h m	° ' "		h m	° ' "	° ' "	
10	3 17.3	N.13 12	0.5274	21 59.1	39 4	S.6 26	0.4041
14	3 24.0	13 38	0.5244	21 50.0	40 0	6 23	0.4044
18	3 30.7	14 2	0.5211	21 40.9	40 57	6 20	0.4048
22	3 37.3	14 26	0.5176	21 31.8	41 53	6 17	0.4051
26	3 43.9	14 49	0.5138	21 22.7	42 49	6 13	0.4055
30	3 50.4	15 10	0.5098	21 13.5	43 45	6 9	0.4058
July							
4	3 56.9	15 30	0.5055	21 4.2	44 41	6 6	0.4061
8	4 3.4	15 48	0.5010	20 54.9	45 37	6 3	0.4064
12	4 9.8	16 5	0.4962	20 45.5	46 33	5 59	0.4067
16	4 16.1	16 22	0.4911	20 36.1	47 29	5 55	0.4070
20	4 22.4	16 37	0.4858	20 26.6	48 25	5 51	0.4072
24	4 28.6	16 50	0.4802	20 17.0	49 21	5 47	0.4075
28	4 34.7	17 3	0.4743	20 7.3	50 16	5 43	0.4077
August							
1	4 40.6	17 15	0.4682	19 57.5	51 11	5 39	0.4080
5	4 46.4	17 25	0.4618	19 47.6	52 7	5 35	0.4082
9	4 52.2	17 34	0.4551	19 37.6	53 2	5 31	0.4084
13	4 57.9	17 42	0.4480	19 27.4	53 57	5 26	0.4086
17	5 3.4	17 49	0.4407	19 17.0	54 53	5 22	0.4088
21	5 8.7	17 55	0.4331	19 6.5	55 48	5 17	0.4090
25	5 13.8	18 0	0.4253	18 55.9	56 43	5 12	0.4092
29	5 18.7	18 4	0.4172	18 45.1	57 38	5 8	0.4094
Sept.							
2	5 23.4	18 8	0.4088	18 34.1	58 33	5 3	0.4096
6	5 28.0	18 11	0.4001	18 22.8	59 27	4 58	0.4097
10	5 32.3	18 13	0.3912	18 11.3	60 22	4 53	0.4098
14	5 36.3	18 14	0.3820	17 59.5	61 17	4 48	0.4099
18	5 40.1	18 15	0.3726	17 47.5	62 12	4 43	0.4100
22	5 43.6	18 15	0.3629	17 35.1	63 7	4 38	0.4100
26	5 46.8	18 14	0.3530	17 22.5	64 2	4 33	0.4101
30	5 49.7	18 14	0.3430	17 9.7	64 56	4 27	0.4102
Oct.							
4	5 52.2	18 14	0.3328	16 56.4	65 51	4 22	0.4102
8	5 54.3	18 13	0.3225	16 42.7	66 45	4 17	0.4103
12	5 55.9	18 13	0.3122	16 28.5	67 39	4 11	0.4104
16	5 57.1	18 13	0.3018	16 13.9	68 34	4 5	0.4104
20	5 57.9	18 12	0.2914	15 58.9	69 29	4 0	0.4104
24	5 58.4	18 12	0.2811	15 43.6	70 23	3 54	0.4105
28	5 58.4	18 13	0.2710	15 27.7	71 18	3 49	0.4105
Nov.							
1	5 57.8	18 14	0.2612	15 11.3	72 12	3 43	0.4105
5	5 56.6	18 15	0.2518	14 54.3	73 6	3 37	0.4105
9	5 55.0	18 17	0.2427	14 36.8	74 1	3 31	0.4105
13	5 52.9	18 20	0.2343	14 18.9	74 56	3 25	0.4104
17	5 50.3	18 23	0.2266	14 0.7	75 50	3 19	0.4104
21	5 47.3	N.18 27	0.2196	13 42.1	76 45	S.3 13	0.4103

MEAN TIME.

Month and Day.	Geocentric.				Heliocentric.		
	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Nov. 21	^h 5 ^m 47.3	N. 18 27	0.2196	^h 13 ^m 42.1	^o 76 ['] 45	S. 3 13	0.4103
25	5 43.9	18 31	0.2136	13 22.9	77 39	3 7	0.4102
29	5 40.1	18 36	0.2086	13 3.3	78 33	3 1	0.4101
Dec. 3	5 36.0	18 41	0.2048	12 43.4	79 28	2 55	0.4100
7	5 31.7	18 47	0.2022	12 23.4	80 23	2 49	0.4099
11	5 27.3	18 53	0.2007	12 3.3	81 17	2 42	0.4098
15	5 22.8	18 59	0.2003	11 43.2	82 12	2 36	0.4097
19	5 18.4	19 6	0.2014	11 23.0	83 6	2 30	0.4096
23	5 14.1	19 13	0.2041	11 2.9	84 0	2 23	0.4094
27	5 10.0	19 20	0.2079	10 43.1	84 55	2 17	0.4092
31	5 6.2	19 28	0.2126	10 23.6	85 50	2 10	0.4090
35	5 2.6	N. 19 36	0.2183	10 4.4	86 44	S. 2 3	0.4089

EPHEMERIS FOR THE OPPOSITION.
At Transit over the Meridian of Greenwich.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
September 12	^h 5 ^m 35 ^s 7.50	+ 2.49	N. 18° 13' 23".2	+ 0.7	3.6
13	5 36 6.86	2.45	18 13 39.9	0.7	3.6
14	5 37 5.22	2.41	18 13 54.6	0.6	3.6
15	5 38 2.55	2.36	18 14 7.4	0.5	3.6
16	5 38 58.83	2.32	18 14 18.3	0.4	3.6
17	5 39 54.06	2.28	18 14 27.5	0.4	3.6
18	5 40 48.21	2.23	18 14 35.1	0.3	3.6
19	5 41 41.26	2.18	18 14 40.9	0.2	3.6
20	5 42 33.20	2.13	18 14 45.1	0.1	3.7
21	5 43 23.99	2.08	18 14 47.8	+ 0.1	3.7
22	5 44 13.62	2.03	18 14 49.2	0.0	3.7
23	5 45 2.06	1.99	18 14 49.2	0.0	3.7
24	5 45 49.31	1.94	18 14 47.9	- 0.1	3.7
25	5 46 35.33	1.89	18 14 45.6	0.1	3.7
26	5 47 20.10	1.84	18 14 42.1	0.2	3.8
27	5 48 3.59	1.79	18 14 37.7	0.2	3.8
28	5 48 45.78	1.74	18 14 32.5	0.2	3.8
29	5 49 26.65	1.68	18 14 26.4	0.3	3.8
October 30	5 50 6.17	1.62	18 14 19.7	0.4	3.9
1	5 50 44.35	1.57	18 14 12.5	0.4	3.9
2	5 51 21.17	1.51	18 14 4.8	0.4	3.9
3	5 51 56.60	1.45	18 13 56.6	0.4	4.0
4	5 52 30.61	1.39	18 13 48.2	0.4	4.0
5	5 53 3.19	1.33	18 13 39.6	0.4	4.0
6	5 53 34.31	1.27	18 13 30.9	0.4	4.1
7	5 54 3.97	1.21	18 13 22.2	0.4	4.1
8	5 54 32.15	1.15	18 13 13.5	0.4	4.1
9	5 54 58.81	1.09	18 13 5.0	0.4	4.1
10	5 55 23.95	1.03	18 12 56.7	0.3	4.2
11	5 55 47.55	0.96	18 12 48.8	0.3	4.2
12	5 56 9.59	0.89	18 12 41.4	0.3	4.2
13	5 56 30.04	0.83	18 12 34.5	0.3	4.2
14	5 56 48.89	0.76	18 12 28.2	0.2	4.2
15	5 57 6.12	0.69	18 12 22.6	0.2	4.3
16	5 57 21.70	0.62	18 12 17.8	0.2	4.3
17	5 57 35.62	0.55	18 12 13.9	0.1	4.3
18	5 57 47.87	0.48	18 12 10.9	0.1	4.3
19	5 57 58.42	0.41	18 12 8.8	- 0.1	4.4
20	5 58 7.24	0.34	18 12 7.9	0.0	4.4
21	5 58 14.31	0.27	18 12 8.2	0.0	4.4
22	5 58 19.63	0.20	18 12 9.7	+ 0.1	4.4
23	5 58 23.17	+ 0.12	N. 18 12 12.4	+ 0.1	4.5

EPHEMERIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Month and Day.		Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
October		^h ^m ^s	^s	[°] ['] ["]	["]	["]
23		5 58 23.17	+ 0.12	N. 18 12 12.4	+ 0.1	4.5
24		5 58 24.92	+ 0.04	18 12 16.5	0.2	4.5
25		5 58 24.84	- 0.04	18 12 22.0	0.3	4.5
26		5 58 22.94	0.12	18 12 29.1	0.3	4.5
27		5 58 19.22	0.19	18 12 37.8	0.4	4.6
28		5 58 13.66	0.27	18 12 48.2	0.5	4.6
29		5 58 6.25	0.35	18 13 0.2	0.5	4.7
30		5 57 56.98	0.43	18 13 14.0	0.6	4.7
31		5 57 45.85	0.50	18 13 29.8	0.6	4.7
November						
1		5 57 32.86	0.58	18 13 47.4	0.7	4.7
2		5 57 18.01	0.66	18 14 7.1	0.8	4.8
3		5 57 1.29	0.74	18 14 28.9	0.9	4.8
4		5 56 42.72	0.82	18 14 52.6	1.0	4.8
5		5 56 22.29	0.90	18 15 18.3	1.1	4.8
6		5 56 0.02	0.97	18 15 46.1	1.2	4.9
7		5 55 35.90	1.05	18 16 16.2	1.3	4.9
8		5 55 9.95	1.13	18 16 48.3	1.4	4.9
9		5 54 42.17	1.20	18 17 22.6	1.5	4.9
10		5 54 12.58	1.28	18 17 59.0	1.6	4.9
11		5 53 41.18	1.35	18 18 37.6	1.7	4.9
12		5 53 8.00	1.42	18 19 18.4	1.7	5.0
13		5 52 33.05	1.50	18 20 1.3	1.8	5.0
14		5 51 56.35	1.57	18 20 46.4	1.9	5.0
15		5 51 17.91	1.64	18 21 33.6	2.0	5.0
16		5 50 37.77	1.71	18 22 23.0	2.1	5.0
17		5 49 55.94	1.78	18 23 14.4	2.2	5.1
18		5 49 12.45	1.85	18 24 8.0	2.3	5.1
19		5 48 27.34	1.92	18 25 3.7	2.4	5.1
20		5 47 40.63	1.98	18 26 1.4	2.5	5.1
21		5 46 52.37	2.04	18 27 1.1	2.6	5.1
22		5 46 2.61	2.10	18 28 2.9	2.7	5.2
23		5 45 11.38	2.16	18 29 6.7	2.8	5.2
24		5 44 18.72	2.22	18 30 12.5	2.8	5.2
25		5 43 24.70	2.28	18 31 20.2	2.9	5.2
26		5 42 29.36	2.33	18 32 29.9	3.0	5.2
27		5 41 32.77	2.38	18 33 41.4	3.0	5.3
28		5 40 34.99	2.43	18 34 54.7	3.1	5.3
29		5 39 36.08	2.48	18 36 9.9	3.2	5.3
30		5 38 36.10	2.52	18 37 26.8	3.2	5.3
December						
1		5 37 35.13	2.56	18 38 45.3	3.3	5.3
2		5 36 33.24	2.60	18 40 5.5	3.4	5.3
3		5 35 30.49	- 2.63	N. 18 41 27.4	+ 3.4	5.4

EPHEMERIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Month and Day.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
December	^h ^m ^s	^s	[°] ['] ["]	["]	["]
3	5 35 30.49	— 2.63	N. 18 41 27.4	+ 3.4	5.4
4	5 34 26.96	2.66	18 42 50.9	3.5	5.4
5	5 33 22.72	2.69	18 44 15.9	3.6	5.4
6	5 32 17.86	2.71	18 45 42.5	3.6	5.4
7	5 31 12.45	2.73	18 47 10.5	3.7	5.4
8	5 30 6.57	2.75	18 48 39.9	3.8	5.4
9	5 29 0.29	2.77	18 50 10.7	3.8	5.4
10	5 27 53.68	2.78	18 51 42.9	3.9	5.4
11	5 26 46.82	2.79	18 53 16.3	3.9	5.4
12	5 25 39.80	2.79	18 54 51.0	4.0	5.4
♂ 13	5 24 32.69	2.80	18 56 26.9	4.0	5.4
14	5 23 25.58	2.79	18 58 4.1	4.1	5.4
15	5 22 18.54	2.79	18 59 42.5	4.1	5.4
16	5 21 11.65	2.78	19 1 22.1	4.2	5.4
17	5 20 4.99	2.77	19 3 2.9	4.2	5.4
18	5 18 58.65	2.76	19 4 44.9	4.3	5.4
19	5 17 52.70	2.74	19 6 28.2	4.3	5.4
20	5 16 47.22	2.72	19 8 12.8	4.4	5.4
21	5 15 42.30	2.69	19 9 58.6	4.4	5.4
22	5 14 38.00	2.66	19 11 45.8	4.5	5.4
23	5 13 34.41	2.63	19 13 34.2	4.5	5.4
24	5 12 31.61	2.60	19 15 23.9	4.6	5.4
25	5 11 29.67	2.56	19 17 15.0	4.7	5.3
26	5 10 28.67	2.52	19 19 7.5	4.7	5.3
27	5 9 28.67	2.48	19 21 1.3	4.8	5.3
28	5 8 29.75	2.43	19 22 56.6	4.8	5.3
29	5 7 31.97	2.38	19 24 53.3	4.9	5.3
30	5 6 35.40	2.33	19 26 51.6	4.9	5.3
31	5 5 40.11	2.28	19 28 51.4	5.0	5.3
32	5 4 46.15	— 2.22	N. 19 30 52.7	+ 5.1	5.2

This Ephemeris will be continued in the Supplement to the Nautical Almanac for 1860.

MEAN TIME AT GREENWICH

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.
	Noon.			Noon.			Earth.	Sun.	
							Noon.	Noon.	
Jan. 1	h	m	Δ_1	S.	o	Δ_1	Δ_1	Δ_1	h m Δ_1
	17	50.4	+17.0	20	3.6	-2.6	0.5751	0.4487	23 6.9 -22.4
11	18	7.4	+16.8	20	6.2	-4.9	0.5725	0.4512	22 44.5 -22.7
21	18	24.2	+16.2	20	1.3	+11.8	0.5683	0.4535	22 21.8 -23.1
31	18	40.4	+15.7	19	49.5	17.8	0.5623	0.4558	21 58.7 -23.7
Feb. 10	18	56.1	+15.1	19	31.7	23.2	0.5546	0.4581	21 35.0 -24.5
20	19	11.2	+14.2	19	8.5	27.6	0.5451	0.4602	21 10.5 -25.2
Mar. 1	19	25.4	+13.4	18	40.9	30.7	0.5338	0.4622	20 45.3 -26.1
11	19	38.8	+12.4	18	10.2	32.5	0.5209	0.4642	20 19.2 -27.1
21	19	51.2	+11.2	17	37.7	32.3	0.5063	0.4661	19 52.1 -28.2
31	20	2.4	+9.9	17	4.4	32.2	0.4900	0.4679	19 23.9 -29.6
Apr. 10	20	12.3	+8.4	16	32.2	29.9	0.4722	0.4696	18 54.3 -31.0
20	20	20.7	+6.8	16	2.3	25.7	0.4531	0.4712	18 23.3 -32.7
30	20	27.5	+5.0	15	36.6	19.9	0.4328	0.4728	17 50.6 -34.5
May 10	20	32.5	+3.0	15	16.7	12.3	0.4117	0.4742	17 16.1 -36.5
20	20	35.5	+0.8	15	4.4	+3.4	0.3903	0.4756	16 39.6 -38.7
30	20	36.3	-1.6	15	1.0	-6.6	0.3693	0.4769	16 0.9 -41.0
June 9	20	34.7	3.8	15	7.6	17.0	0.3495	0.4781	15 19.9 -43.3
19	20	30.9	6.0	15	24.6	26.8	0.3320	0.4792	14 36.6 -45.4
29	20	24.9	7.8	15	51.4	34.7	0.3181	0.4802	13 51.2 -47.1
July 9	20	17.1	8.8	16	26.1	39.7	0.3089	0.4811	13 4.1 -48.1
19	20	8.3	9.1	17	5.8	41.3	0.3054	0.4820	12 16.0 -48.4
29	19	59.2	8.4	17	47.1	39.7	0.3079	0.4828	11 27.6 -47.6
Aug. 8	19	50.8	7.0	18	26.8	35.6	0.3163	0.4835	10 40.0 -46.2
18	19	43.8	5.0	19	2.4	30.0	0.3300	0.4841	9 53.8 -44.2
28	19	38.8	2.7	19	32.4	23.5	0.3478	0.4846	9 9.6 -41.9
Sept. 7	19	36.1	0.2	19	55.9	16.9	0.3684	0.4850	8 27.7 -39.5
17	19	35.9	+2.1	20	12.8	10.2	0.3908	0.4854	7 48.2 -37.1
27	19	38.0	4.3	20	23.0	-3.6	0.4138	0.4856	7 11.1 -35.0
Oct. 7	19	42.3	6.3	20	26.6	+3.1	0.4367	0.4858	6 36.1 -33.0
17	19	48.6	7.9	20	23.5	9.7	0.4590	0.4859	6 3.1 -31.5
27	19	56.5	9.3	20	13.8	16.5	0.4802	0.4859	5 31.6 -29.9
Nov. 6	20	5.8	10.6	19	57.3	23.3	0.5000	0.4858	5 1.7 -28.8
16	20	16.4	11.6	19	34.0	29.9	0.5183	0.4857	4 32.9 -27.8
26	20	28.0	12.3	19	4.1	36.7	0.5348	0.4854	4 5.1 -27.0
Dec. 6	20	40.3	13.0	18	27.4	43.1	0.5496	0.4851	3 38.1 -26.4
16	20	53.3	13.5	17	44.3	49.2	0.5626	0.4847	3 11.7 -25.8
26	21	6.8	+13.9	16	55.1	+55.0	0.5738	0.4842	2 45.9 -25.5
36	21	20.7	+13.9	S. 16	0.1	+55.0	0.5831	0.4836	2 20.4 -25.5

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.
							Earth.	Sun.	
	Noon.			Noon.			Noon.	Noon.	
	h	m	Δ_1		Δ_1		Δ_1	Δ_1	h m Δ_1
Jan. 1	23	42.5	+19.0	S. 15	17.7	+131.8	0.3094	+202	0.2871 + 6
11	0	1.5	19.4	13	5.9	136.6	.3296	188	.2877 10
21	0	20.9	19.9	10	49.3	140.0	.3484	176	.2887 13
31	0	40.8	20.1	8	29.3	141.6	.3660	163	.2900 16
Feb. 10	1	0.9	20.4	6	7.7	141.1	.3823	151	.2916 20
20	1	21.3	20.7	3	46.6	139.1	.3974	142	.2936 22
Mar. 1	1	42.0	20.8	S. 1	27.5	134.8	.4116	130	.2958 25
11	2	2.8	21.2	N. 0	47.3	129.2	.4246	120	.2983 28
21	2	24.0	21.3	2	56.5	122.4	.4366	110	.3011 31
31	2	45.3	21.5	4	58.9	113.9	.4476	100	.3042 32
Apr. 10	3	6.8	21.7	6	52.8	104.5	.4576	90	.3074 35
20	3	28.5	21.9	8	37.3	94.0	.4666	81	.3109 36
30	3	50.4	21.9	10	11.3	82.6	.4747	70	.3145 38
May 10	4	12.3	21.9	11	33.9	70.9	.4817	61	.3183 39
20	4	34.2	22.0	12	44.8	58.6	.4878	50	.3222 41
30	4	56.2	21.9	13	43.4	46.3	.4928	40	.3263 41
June 9	5	18.1	21.7	14	29.7	34.0	.4968	28	.3304 42
19	5	39.8	21.5	15	3.7	22.0	.4996	17	.3346 43
29	6	1.3	21.2	15	25.7	10.3	.5013	5	.3389 43
July 9	6	22.5	20.8	15	36.0	0.5	.5018	7	.3432 43
19	6	43.3	20.3	15	35.5	10.6	.5011	21	.3475 43
29	7	3.6	19.8	15	24.9	19.8	.4990	34	.3518 44
Aug. 8	7	23.4	19.3	15	5.1	27.8	.4956	48	.3562 43
18	7	42.7	18.5	14	37.3	34.5	.4908	63	.3605 43
28	8	1.2	17.9	14	2.8	40.0	.4845	79	.3648 42
Sept. 7	8	19.1	17.0	13	22.8	44.0	.4766	96	.3690 42
17	8	36.1	16.1	12	38.8	46.1	.4670	113	.3732 42
27	8	52.2	15.3	11	52.7	47.0	.4557	129	.3774 41
Oct. 7	9	7.5	14.2	11	5.7	45.5	.4428	149	.3815 40
17	9	21.7	13.0	10	20.2	42.2	.4279	167	.3855 39
27	9	34.7	11.6	9	38.0	36.5	.4112	184	.3894 39
Nov. 6	9	46.3	10.1	9	1.5	28.4	.3928	201	.3933 38
16	9	56.4	8.3	8	33.1	17.6	.3727	216	.3971 37
26	10	4.7	6.4	8	15.5	3.4	.3511	227	.4008 36
Dec. 6	10	11.1	4.1	8	12.1	13.0	.3284	232	.4044 35
16	10	15.2	+1.5	8	25.1	32.1	.3052	226	.4079 34
26	10	16.7	-1.1	8	57.2	52.8	.2826	210	.4113 33
36	10	15.6		N. 9	50.0	52.8	0.2616	210	0.4146 +33

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.		Log. of Distance from the		Meridian Passage.
						Earth.	Sun.	
	Noon.			Noon.		Noon.	Noon.	
Jan. 1	h	m	Δ_1	N. 21	0° 7'	0° 0041	0° 2953	10 53° 3'
11	5	36.8	7.2	20	23.7	0.0298	0.2999	10 7° 0'
21	5	20.6	3.6	19	27.3	0.321	0.47	9 42.8
31	5	26.0	0.1	19	56.4	0.0619	0.3046	9 24.2
	5	26.1		19	38.9	0.0977	0.3096	8 45.2
Feb. 10			3.8					
	5	29.9		19	29.8	0.1351	0.3146	8 9.7
20	5	36.7	6.8	19	26.4	0.1726	0.3197	7 37.3
Mar. 1	5	46.2	9.5	19	25.9	0.2091	0.3248	7 7.5
11	5	57.9	11.7	19	25.4	0.2441	0.3300	6 39.8
			13.3					
21	6	11.2		19	22.8	0.2772	0.3352	6 13.8
31	6	25.9	14.7	19	15.8	0.3084	0.3404	5 49.2
Apr. 10	6	41.7	15.8	19	3.2	0.3375	0.3456	5 25.6
20	6	58.2	16.5	18	43.8	0.3645	0.3507	5 2.7
			17.1					
30	7	15.3		18	17.0	0.3895	0.3558	4 40.4
May 10	7	32.8	17.5	17	42.3	0.4126	0.3608	4 18.5
20	7	50.4	17.6	16	59.7	0.4337	0.3657	3 56.8
30	8	8.2	17.8	16	9.3	0.4530	0.3706	3 35.2
			17.8					
June 9	8	26.0		15	11.2	0.4706	0.3754	3 13.6
19	8	43.8	17.8	14	6.0	0.4865	0.3801	2 51.9
29	9	1.4	17.6	12	54.2	0.5007	0.3846	2 30.1
July 9	9	18.8	17.4	11	36.2	0.5133	0.3891	2 8.2
			17.2					
19	9	36.0		10	12.8	0.5243	0.3934	1 46.0
29	9	53.0	17.0	8	44.7	0.5337	0.3977	1 23.6
Aug. 8	10	9.8	16.8	7	12.4	0.5415	0.4018	1 1.0
18	10	26.3	16.5	5	36.8	0.5478	0.4058	0 38.1
			16.3					
28	10	42.6		3	58.5	0.5525	0.4096	0 15.0
Sept. 7	10	58.6	16.0	2	18.2	0.5556	0.4134	23 49.3
17	11	14.4	15.8	N. 0	36.8	0.5571	0.4170	23 25.7
27	11	29.9	15.5	S. 1	5.3	0.5570	0.4205	23 1.8
			15.2					
Oct. 7	11	45.1		2	47.1	0.5553	0.4239	22 37.6
17	12	0.1	15.0	4	27.9	0.5518	0.4271	22 13.1
27	12	14.7	14.6	6	7.2	0.5466	0.4302	21 48.3
Nov. 6	12	28.9	14.2	7	44.0	0.5397	0.4332	21 23.1
			13.8					
16	12	42.7		9	17.8	0.5309	0.4361	20 57.5
26	12	56.0	13.3	10	47.8	0.5203	0.4388	20 31.3
Dec. 6	13	8.7	12.7	12	13.3	0.5078	0.4414	20 4.6
16	13	20.6	11.9	13	33.6	0.4935	0.4439	19 37.1
			11.0					
26	13	31.6		14	47.9	0.4774	0.4462	19 8.7
36	13	41.6	10.0	S. 15	55.5	0.4594	0.4485	18 39.1

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.		
							Earth.		Sun.				
	Noon.			Noon.			Noon.		Noon.				
	h	m	Δ_1 m	o	'	Δ_1	Δ_1		Δ_1		h	m	Δ_1 m
Jan. 1	15	57.3	+16.8	S. 16	11.6	-44.6	0.5063	-132	0.4038	-7	21	14.0	-22.6
11	16	14.1	16.4	16	56.2	36.6	4931	151	4031	9	20	51.4	23.0
21	16	30.5	16.0	17	32.8	28.6	4780	171	4022	10	20	28.4	23.5
31	16	46.5		18	1.4	21.0	4609	190	4012	11	20	4.9	24.2
Feb. 10	17	1.8	15.3	18	22.4	13.8	4419	209	4001	13	19	40.7	25.0
20	17	16.2	14.4	18	36.2	7.5	4210	229	3988	13	19	15.7	25.9
Mar. 1	17	29.8	13.6	18	43.7	2.1	3981	248	3975	15	18	49.8	27.3
11	17	42.0	12.2	18	45.8	+2.2	3733	266	3960	16	18	22.5	28.7
			10.7										
21	17	52.7	9.0	18	43.6	4.9	3467	280	3944	18	17	53.8	30.6
31	18	1.7	6.8	18	38.7	6.1	3187	294	3926	18	17	23.2	32.6
Apr. 10	18	8.5	4.4	18	32.6	5.6	2893	300	3908	20	16	50.6	35.2
20	18	12.9	+1.6	18	27.0	+3.3	2593	298	3888	21	16	15.4	37.9
30	18	14.5	-1.5	18	23.7	-0.4	2295	286	3867	22	15	37.5	41.0
May 10	18	13.0	4.6	18	24.1	5.1	2009	258	3845	23	14	56.5	44.1
20	18	8.4	7.5	18	29.2	10.1	1751	212	3822	24	14	12.4	46.9
30	18	0.9	9.9	18	39.3	14.6	1539	148	3798	25	13	25.5	49.3
June 9	17	51.0	11.2	18	53.9	18.2	1391	-70	3773	27	12	36.2	50.5
19	17	39.8	11.2	19	12.1	20.7	1321	+12	3746	27	11	45.7	50.3
29	17	28.6	9.7	19	32.8	23.1	1333	91	3719	29	10	55.4	48.9
July 9	17	18.9	7.2	19	55.9	25.4	1424	156	3690	30	10	6.5	46.4
19	17	11.7	4.1	20	21.3	27.9	1580	203	3660	30	9	20.1	43.3
29	17	7.6	-0.7	20	49.2	30.3	1783	232	3630	32	8	36.8	39.9
Aug. 8	17	6.9	+2.6	21	19.5	32.0	2015	246	3598	32	7	56.9	36.6
18	17	9.5	5.7	21	51.5	32.5	2261	249	3566	33	7	20.3	33.6
28	17	15.2	8.3	22	24.0	31.7	2510	244	3533	35	6	46.7	30.7
Sept. 7	17	23.7	11.0	22	55.7	29.0	2754	234	3498	36	6	16.0	28.4
17	17	34.7	13.1	23	24.7	24.7	2988	220	3464	36	5	47.6	26.2
27	17	47.8	15.0	23	49.4	18.8	3208	204	3428	36	5	21.4	24.3
Oct. 7	18	2.8	16.7	24	8.2	11.1	3412	188	3392	37	4	57.1	22.8
17	18	19.5	18.0	24	19.3	2.1	3600	172	3355	37	4	34.3	21.3
27	18	37.5	19.1	24	21.4	8.1	3772	154	3318	37	4	13.0	20.2
Nov. 6	18	56.6	20.1	24	13.3	19.2	3926	138	3281	38	3	52.8	19.3
16	19	16.7	20.9	23	54.1	31.2	4064	122	3243	38	3	33.5	18.5
26	19	37.6	21.5	23	22.9	43.6	4186	107	3205	37	3	15.0	18.0
Dec. 6	19	59.1	21.9	22	39.3	56.0	4293	92	3168	38	2	57.0	17.5
16	20	21.0	22.2	21	43.3	68.3	4385	77	3130	37	2	39.5	17.2
26	20	43.2	+22.3	20	35.0	80.2	4462	64	3093	-36	2	22.3	-17.0
36	21	5.5		S. 19	14.8	+80.2	0.4526	+64	0.3057		2	5.3	

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.		Declination.		Log. of Distance from the		Meridian Passage.
					Earth.	Sun.	
	Noon.		Noon.		Noon.	Noon.	
	^h	^m	^Δ	^Δ	^Δ	^Δ	^h ^m ^Δ
Jan. 1	16	55.1	+17.6	S. 22 26.2	5484	0.4280	22 11.8
11	17	12.7	17.4	22 59.1	5404	0.4282	21 50.0
21	17	30.1	17.0	23 24.8	5306	0.4283	21 27.9
31	17	47.1	16.5	23 43.7	5190	0.4283	21 5.5
Feb. 10	18	3.6	15.9	23 56.3	5056	0.4282	20 42.6
20	18	19.5	15.1	24 3.6	4903	0.4280	20 19.0
Mar. 1	18	34.6	14.8	24 6.4	4733	0.4278	19 54.7
11	18	48.8	13.1	24 6.1	4544	0.4275	19 29.4
21	19	1.0	11.7	24 4.2	4338	0.4271	19 3.0
31	19	13.6	10.3	24 1.9	4115	0.4266	18 35.3
Apr. 10	19	23.9	8.5	24 1.5	3877	0.4260	18 6.0
20	19	32.4	6.4	24 4.6	3625	0.4254	17 35.0
30	19	38.8	4.1	24 12.9	3365	0.4246	17 1.0
May 10	19	42.9	+1.4	24 28.3	3101	0.4238	16 26.5
20	19	44.3	-1.4	24 51.7	2841	0.4229	15 48.4
30	19	43.9	4.3	25 23.4	2596	0.4220	15 7.5
June 9	19	38.6	7.1	26 2.3	2378	0.4209	14 23.7
19	19	31.5	9.3	26 45.6	2205	0.4198	13 37.2
29	19	22.2	10.6	27 22.7	2089	0.4186	12 48.5
July 9	19	11.6	10.8	28 7.0	2042	0.4173	12 58.6
19	19	0.8	9.6	28 36.6	2068	0.4159	11 8.7
29	18	51.2	7.3	28 55.6	2163	0.4145	10 19.9
Aug. 8	18	43.9	4.5	29 4.6	2316	0.4130	9 33.4
18	18	39.4	-1.3	29 5.3	2511	0.4114	8 49.7
28	18	38.1	+1.8	28 59.5	2734	0.4097	8 9.2
Sept. 7	18	39.9	4.7	28 49.0	2972	0.4080	7 31.8
17	18	44.6	7.3	28 34.7	3214	0.4062	6 57.3
27	18	51.9	9.6	28 16.6	3451	0.4043	6 25.3
Oct. 7	19	1.5	11.5	27 54.3	3680	0.4024	5 55.5
17	19	13.0	13.0	27 27.4	3897	0.4004	5 27.6
27	19	26.0	14.4	26 54.7	4098	0.3983	5 1.4
Nov. 6	19	40.4	15.5	26 15.9	4283	0.3962	4 36.4
16	19	55.9	16.4	25 29.9	4451	0.3940	4 12.5
26	20	12.3	17.0	24 36.6	4603	0.3917	3 49.5
Dec. 6	20	29.3	17.5	23 35.4	4736	0.3894	3 27.2
16	20	46.8	17.9	22 26.5	4853	0.3871	3 5.3
26	21	4.7	+18.2	21 9.7	4953	0.3847	2 43.8
36	21	22.9	S. 19 45.5	+84.2	5036	0.3823	2 22.5

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.		Declination.		Log. of Distance from the		Meridian Passage.					
					Earth.	Sun.						
	Noon.	Noon.	Noon.	Noon.								
Jan. 1	h 18	m 43.6	Δ_1 m	S. 23	28.1	Δ_1 o	5932	Δ_1 o	4677	h 0	m 2.3	Δ_1 m
11	19	1.2	+ 17.6	23	0.3	+ 27.8	5932	0	4689	23	38.3	- 24.0
21	19	18.4	17.2	22	25.7	34.6	5915	17	4701	12	16.1	22.2
31	19	35.3	16.9	21	44.7	41.0	5883	32	4713	12	53.5	22.6
			16.5			46.6		48		12		23.0
Feb. 10	19	51.8		20	58.1		5835		4725	22	30.5	23.5
20	20	7.7	15.9	20	6.6	51.5	5771	64	4738	13	7.0	23.5
Mar. 1	20	23.0	15.3	19	11.0	55.6	5692	79	4750	12	42.9	24.1
11	20	37.5	14.5	18	12.2	58.8	5596	96	4763	13	18.0	24.9
			13.8			60.7		111		13		25.7
21	20	51.3		17	11.5		5485		4776	13	52.3	26.5
31	21	4.3	13.0	16	9.8	61.7	5359	126	4789	13	25.8	26.5
Apr. 10	21	16.3	12.0	15	8.2	61.6	5217	142	4803	14	58.3	27.5
20	21	27.2	10.9	14	8.1	60.1	5061	156	4816	13	29.8	28.5
			9.7			57.4		170		14		29.8
30	21	36.9		13	10.7		4891		4830	19	0.0	31.0
May 10	21	45.3	8.4	12	17.4	53.3	4709	182	4843	13	29.0	31.0
20	21	52.3	7.0	11	29.5	47.9	4517	192	4857	14	56.5	32.5
30	21	57.6	5.3	10	48.6	40.9	4318	199	4871	14	22.3	34.3
			3.5			32.6		202		13		36.0
June 9	22	1.1		10	16.0		4116		4884	16	46.3	37.9
19	22	2.6	+ 1.5	9	53.1	22.9	3918	198	4898	14	8.4	37.9
29	22	2.1	- 0.5	9	40.8	12.3	3730	188	4912	14	28.4	40.0
July 9	21	59.5	2.6	9	39.7	+ 1.1	3562	168	4926	14	46.4	42.0
			4.6			- 9.8		136		13		44.0
19	21	54.9		9	49.5		3426		4939	14	2.4	45.6
29	21	48.7	6.2	10	8.7	19.2	3331	95	4953	14	16.8	45.6
Aug. 8	21	41.3	7.4	10	35.1	26.4	3288	43	4966	13	30.1	46.7
18	21	33.6	7.7	11	5.3	30.2	3301	+ 13	4980	14	43.1	47.0
			7.4			30.3		69		13		46.6
28	21	26.2		11	35.6		3370		4993	10	56.5	45.5
Sept. 7	21	19.9	6.3	12	2.9	27.3	3492	122	5007	14	11.0	45.5
17	21	15.2	4.7	12	24.5	21.6	3656	164	5020	13	27.1	43.9
27	21	12.4	2.8	12	38.7	14.2	3852	196	5033	13	45.1	42.0
			- 0.5			- 5.8		216		13		39.8
Oct. 7	21	11.9		12	44.5		4068		5046	8	5.3	37.7
17	21	13.4	+ 1.5	12	41.5	+ 3.0	4296	228	5059	13	27.6	37.7
27	21	16.9	3.5	12	29.8	11.7	4525	229	5071	12	51.8	35.8
Nov. 6	21	22.2	5.3	12	9.7	20.1	4752	227	5084	13	17.8	34.0
			6.8			28.3		217		12		32.5
16	21	29.0		11	41.4		4969		5096	5	45.3	31.2
26	21	37.1	8.1	11	5.2	36.2	5175	206	5108	12	14.1	31.2
Dec. 6	21	46.4	9.3	10	21.6	43.6	5367	192	5120	12	44.0	30.1
16	21	56.5	10.1	9	31.2	50.4	5543	176	5132	12	14.8	29.2
			10.9			56.7		160		12		28.5
26	22	7.4		8	34.5		5703		5144	3	46.3	- 28.0
36	22	18.8	+ 11.4	S. 7	32.0	+ 62.5	5846	+ 143	5156	+ 12	18.3	- 28.0

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.		Declination.		Log. of Distance from the		Meridian Passage.	
					Earth.	Sun.		
	Hour.	Min.	Hour.	Min.	Noon.	Noon.		
Jan. 1	2	47.9	N. 10	18.3	0.2624	0.3973	8	5.2
11	2	50.0	10	57.2	0.2915	0.3991	7	28.1
21	3	54.7	11	45.5	0.3204	0.4009	6	53.5
31	3	1.6	12	40.5	0.3485	0.4026	6	21.1
Feb. 10	3	10.4	13	40.1	0.3753	0.4043	5	50.7
20	3	21.0	14	41.9	0.4003	0.4060	5	21.8
Mar. 1	3	32.9	15	44.2	0.4236	0.4076	4	54.4
11	3	46.0	16	45.3	0.4451	0.4092	4	28.2
21	4	0.2	17	43.7	0.4646	0.4108	4	3.0
31	4	15.3	18	38.1	0.4823	0.4123	3	38.7
Apr. 10	4	31.1	19	27.4	0.4981	0.4137	3	15.2
20	4	47.6	20	10.8	0.5121	0.4151	2	52.3
30	5	4.6	20	47.5	0.5244	0.4164	2	29.9
May 10	5	22.0	21	16.7	0.5350	0.4177	2	7.9
20	5	39.7	21	38.2	0.5439	0.4190	1	46.2
30	5	57.7	21	51.5	0.5513	0.4201	1	24.8
June 9	6	15.8	21	56.6	0.5570	0.4212	1	3.5
19	6	34.0	21	53.3	0.5612	0.4223	0	42.3
29	6	52.1	21	41.9	0.5638	0.4233	0	21.1
July 9	7	10.2	21	22.5	0.5649	0.4242	23	57.6
19	7	28.1	20	55.4	0.5645	0.4251	23	36.1
29	7	45.8	20	21.4	0.5625	0.4259	23	14.4
Aug. 8	8	3.2	19	40.8	0.5590	0.4267	22	52.4
18	8	20.3	18	54.4	0.5538	0.4273	22	30.0
28	8	36.9	18	3.0	0.5471	0.4280	22	7.2
Sept. 7	8	53.1	17	7.6	0.5386	0.4285	21	44.0
17	9	8.8	16	9.2	0.5285	0.4290	21	20.3
27	9	23.9	15	8.8	0.5167	0.4294	20	55.9
Oct. 7	9	38.3	14	7.6	0.5030	0.4298	20	30.9
17	9	52.0	13	7.2	0.4875	0.4301	20	5.1
27	10	4.8	12	8.9	0.4702	0.4304	19	38.5
Nov. 6	10	16.7	11	14.0	0.4510	0.4305	19	10.9
16	10	27.4	10	25.4	0.4301	0.4307	18	42.1
26	10	36.8	9	44.0	0.4074	0.4307	18	12.1
Dec. 6	10	44.7	9	12.4	0.3833	0.4307	17	40.5
16	10	50.7	8	52.6	0.3580	0.4306	17	7.0
26	10	54.7	8	47.0	0.3322	0.4305	16	31.5
36	10	56.4	N. 8	57.3	0.3065	0.4302	15	53.7

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.		Declination.		Log. of Distance from the		Meridian Passage.
					Earth.	Sun.	
	Noon.		Noon.		Noon.	Noon.	
	^h	^m	^Δ	^Δ	^Δ	^Δ	^h ^m ^Δ
Jan. 1	10	30.5	1.9	S. 2 13.6	0.3377	0.4465	15 46.5
11	10	28.6	1.5	2 42.3	3125	4450	15 5.1
21	10	24.1	4.5	2 53.5	2895	4435	14 21.2
31	10	17.3	6.8	2 45.3	2700	4418	13 35.0
Feb. 10	10	8.7	8.6	2 17.2	2557	4400	12 47.1
20	9	59.1	9.6	1 31.1	2478	4381	11 58.2
Mar. 1	9	49.6	9.5	S. 0 31.8	2470	4360	11 9.4
11	9	41.1	8.5	N. 0 34.2	2530	4338	10 21.7
21	9	34.5	6.6	1 40.3	2649	4315	9 36.0
31	9	30.4	4.1	2 41.2	2814	4291	8 52.7
Apr. 10	9	29.0	1.4	3 31.7	3010	4265	8 12.0
20	9	30.2	1.2	4 9.7	3222	4238	7 34.0
30	9	33.9	3.7	4 34.2	3439	4210	6 58.5
May 10	9	39.8	5.9	4 44.9	3654	4181	6 25.1
20	9	47.5	7.7	4 42.3	3860	4150	5 53.5
30	9	56.9	9.4	4 27.1	4054	4118	5 23.5
June 9	10	7.7	10.8	4 0.0	4234	4084	4 54.9
19	10	19.6	11.9	3 22.0	4398	4050	4 27.5
29	10	32.4	12.8	2 33.8	4546	4014	4 1.0
July 9	10	46.2	13.8	1 36.5	4677	3977	3 35.3
19	11	0.6	14.4	65.6	4792	3938	3 10.4
29	11	15.7	15.1	N. 0 30.9	4890	3899	2 46.1
Aug. 8	11	31.3	15.6	S. 0 42.0	4972	3858	2 22.3
18	11	47.5	16.2	2 1.4	5039	3816	1 59.2
28	12	4.2	16.7	3 26.1	5090	3773	1 36.5
Sept. 7	12	21.4	17.2	4 55.4	5127	3729	1 14.3
17	12	39.1	17.7	6 28.3	5148	3684	0 52.7
27	12	57.4	18.3	8 3.5	5154	3638	0 31.5
Oct. 7	13	16.1	18.7	9 40.1	5146	3590	0 10.8
17	13	35.4	19.3	11 16.7	5124	3543	23 48.7
27	13	55.2	19.8	12 52.4	5086	3494	23 29.1
Nov. 6	14	15.6	20.4	14 25.3	5035	3445	23 10.3
16	14	36.6	21.0	15 55.0	4970	3395	22 51.9
26	14	58.2	21.6	17 19.1	4891	3345	22 34.2
Dec. 6	15	20.4	22.2	18 36.5	4797	3295	22 17.0
16	15	43.0	22.6	19 45.6	4690	3245	22 0.3
26	16	6.1	23.1	20 44.8	4569	3194	21 44.1
36	16	29.7	23.6	21 32.7	4434	3145	21 28.3
				S. 22 8.1			15.8

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.		Declination.	Log. of Distance from the		Meridian Passage.
				Earth.	Sun.	
	Noon.	Noon.		Noon.	Noon.	
Jan. 1	h m Δ ₁ 11 13.6 + 2.4 11 16.0 + 1.0 21 11 15.0 - 4.7 31 11 10.3 8.0	N. 30 18.0 + 69.0 31 27.0 + 79.5 32 46.5 81.3 34 7.8 72.2	Δ ₁ 0.2331 - 227 2104 197 1907 153 1755 94	Δ ₁ 0.3739 + 5 3744 6 3750 6 3756 8	h m Δ ₁ 16 29.7 - 37.0 15 52.7 40.6 15 12.1 44.2 14 27.9 47.4	
Feb. 10	11 2.3 10.5 20 10 51.8 11.5	35 20.0 50.4 36 10.4 + 19.5	1661 - 23 1636 + 46 1682 114 1796 170	3764 8 3772 8 3780 10 3790 10	13 40.5 49.9 12 50.6 50.6 12 9.0 50.1 11 9.9 47.9	
Mar. 1	10 40.3 10.8 11 10 29.5 8.8 21 10 20.7 5.8 31 10 14.9 - 2.5	36 29.9 + 19.5 36 13.9 - 16.0 35 24.4 49.5 34 7.3 77.1	1682 + 46 1796 114 1966 170 2179 213	3780 10 3790 10 3800 10 3810 11	12 9.0 50.1 11 9.9 47.9 10 22.0 45.0 9 37.0 41.7	
Apr. 10	10 12.4 - 2.5 20 10 13.9 + 0.6 30 10 16.4 3.4	32 29.4 712.0 30 37.4 121.3 28 36.1 127.6	2419 255 2674 260 2934 259 3193 250	3821 12 3833 12 3845 13 3858 13	8 55.3 38.6 8 16.7 35.9 7 40.8 33.4 7 7.4 31.6	
May 10	10 22.2 7.7 20 10 29.9 9.3 30 10 39.2 10.5	24 17.1 131.4 22 3.0 134.1 19 47.0 136.0 17 29.8 137.2	3443 240 3683 227 3910 213 4123 199	3871 14 3885 13 3898 15 3913 14	6 35.8 30.1 6 5.7 28.8 5 36.9 27.8 5 9.1 27.1	
June 9	11 1.2 12.3 29 11 13.5 12.9 July 9 11 26.4 13.5	15 11.6 138.2 12 52.9 138.7 10 34.1 138.8 8 15.3 138.8	4322 183 4505 168 4673 154 4827 138	3927 15 3942 15 3957 15 3972 15	4 42.0 26.5 4 15.5 25.9 3 49.6 25.5 3 24.1 25.1	
Aug. 8	12 8.0 14.2 18 12 23.6 14.6 28 12 37.4 14.8	5 57.1 138.2 3 39.8 137.3 1 23.8 136.0 0 50.4 134.2	4965 122 5087 108 5195 93 5288 78	3987 16 4003 15 4018 16 4034 15	3 59.0 24.8 3 34.2 24.6 2 9.6 24.2 1 45.4 24.0	
Sept. 7	13 7.9 15.4 17 13 7.9 15.6 27 13 23.5 15.9	3 2.4 132.0 5 11.6 129.2 7 17.7 126.1 9 20.0 122.3	5366 63 5429 48 5477 32 5509 17	4049 16 4065 16 4081 15 4096 16	1 21.4 23.8 0 57.6 23.6 0 34.0 23.3 0 10.7 25.4	
Oct. 7	13 39.4 16.0 17 13 55.4 16.3 27 14 11.7 16.5	11 18.2 118.2 13 11.7 113.5 15 0.1 108.4 16 43.2 103.1	5526 + 1 5527 - 14 5513 31 5482 48	4112 15 4127 15 4142 15 4157 15	23 45.3 22.9 23 22.4 22.8 22 59.6 22.6 22 37.0 22.6	
Nov. 6	14 28.2 16.5 16 14 44.7 16.8 26 15 1.5 16.7	13 11.7 113.5 15 0.1 108.4 16 43.2 103.1 18 20.6 97.4	5527 + 1 5527 - 14 5513 31 5482 48	4127 15 4142 15 4157 15 4172 15	23 22.4 22.9 23 22.4 22.8 22 59.6 22.6 22 37.0 22.6	
Dec. 6	15 18.2 16.8 16 15 31.0 16.6 26 15 51.6 + 16.5 36 16 8.1 + 16.5	19 52.1 91.5 15 0.1 103.1 16 43.2 103.1 18 20.6 97.4	5434 64 5370 81 5289 99 5190 - 99	4172 15 4187 14 4201 + 14 4215 + 14	22 14.4 22.7 21 51.7 22.8 21 28.9 - 22.9 21 6.0 - 22.9	

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.
							Earth.	Sun.	
	Noon.			Noon.			Noon.	Noon.	
Jan. 1	18	54.2	Δ_1	S. 24	44.4	Δ_1	0.5573	0.4194	Δ_1
11	19	13.5	+19.3	24	30.7	+13.7	0.5591	0.4223	+19.3
21	19	32.5	19.0	24	9.2	21.5	0.5593	0.4251	28
31	19	51.1	18.6	23	40.7	28.5	0.5579	0.4279	28
			18.2			34.3			27
Feb. 10	20	9.3		23	6.4		0.5548	0.4306	27
20	20	26.9	17.6	22	27.3	39.1	0.5501	0.4332	26
Mar. 1	20	43.9	17.0	21	44.6	42.7	0.5437	0.4358	26
11	21	0.3	16.4	20	59.6	45.0	0.5356	0.4384	26
			15.6			45.9			25
21	21	15.9		20	13.7		0.5260	0.4409	25
31	21	30.7	14.8	19	28.4	45.3	0.5146	0.4433	24
Apr. 10	21	44.6	13.9	18	45.1	43.3	0.5016	0.4456	23
20	21	57.6	13.0	18	5.4	39.7	0.4871	0.4479	23
			12.0			34.5			21
30	22	9.6		17	30.9		0.4709	0.4500	21
May 10	22	20.4	10.8	17	3.4	27.5	0.4533	0.4522	22
20	22	29.9	9.5	16	44.6	18.8	0.4344	0.4542	20
30	22	37.9	8.0	16	36.2	+8.4	0.4145	0.4562	20
			6.3			3.9			19
June 9	22	44.2		16	40.1		0.3937	0.4581	19
19	22	48.6	4.4	16	57.4	17.3	0.3727	0.4599	18
29	22	50.9	2.3	17	29.0	31.6	0.3520	0.4616	17
July 9	22	51.0	+0.1	18	14.8	45.8	0.3327	0.4633	17
			-2.4			58.3			16
19	22	48.6		19	13.1		0.3157	0.4649	15
29	22	43.9	4.7	20	20.7	67.6	0.3022	0.4664	15
Aug. 8	22	37.1	6.8	21	32.1	71.4	0.2934	0.4678	14
18	22	28.9	8.2	22	40.6	68.5	0.2904	0.4692	14
			8.9			58.9			13
28	22	20.0		23	39.5		0.2935	0.4705	12
Sept. 7	22	11.3	8.7	24	23.3	43.8	0.3026	0.4717	11
17	22	3.8	7.5	24	49.0	25.7	0.3169	0.4728	11
27	21	58.1	5.7	24	56.4	7.4	0.3354	0.4739	11
			8.3			+10.1			9
Oct. 7	21	54.8		24	46.3		0.3568	0.4748	8
17	21	53.9	-0.9	24	21.4	24.9	0.3800	0.4757	8
27	21	53.3	+1.4	23	43.8	37.6	0.4038	0.4765	8
Nov. 6	21	58.9	3.6	22	55.8	48.0	0.4274	0.4773	8
			5.5			56.7			6
16	22	4.4		21	59.1		0.4504	0.4779	6
26	22	11.6	7.2	20	55.0	64.1	0.4723	0.4785	5
Dec. 6	22	20.1	8.5	19	44.6	70.4	0.4927	0.4790	5
16	22	29.8	9.7	18	28.8	75.8	0.5116	0.4794	4
			10.6			80.4			4
26	22	40.4		17	8.4		0.5287	0.4798	4
36	22	51.8	+11.4	S. 15	44.0	+84.4	0.5441	0.4800	+2

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.		Declination.		Log. of Distance from the		Meridian Passage.
					Earth.	Sun.	
	Noon.		Noon.		Noon.	Noon.	
Jan. 1	h m	Δ_1	o ' Δ_1		Δ_1	Δ_1	h m Δ_1
11	19 33.5	+18.8	8. 21 24.2	+67.4	0.5469	0.4092	0 52.1
21	19 52.3	18.7	20 16.8	67.4	0.5468	0.4058	0 31.5
31	20 11.0	18.5	19 0.8	76.0	0.5452	0.4023	0 10.7
	20 29.5	18.5	17 36.5	84.3	0.5421	0.3989	23 47.8
Feb. 10		18.5		92.4			20.9
20	20 48.0	18.2	16 4.1	100.0	0.5374	0.3954	23 26.9
Mar. 1	20 21 6.2	18.0	14 24.1	107.2	0.5312	0.3919	23 5.7
11	21 24.2	17.6	12 36.9	113.7	0.5235	0.3884	22 44.2
	21 41.8	17.4	10 43.2	119.6	0.5142	0.3849	22 22.5
21	21 59.2	17.1	8 43.6	124.9	0.5036	0.3814	22 0.4
31	22 16.3	16.7	6 38.7	129.4	0.4914	0.3780	21 38.1
Apr. 10	22 33.0	16.3	4 29.3	133.3	0.4779	0.3745	21 15.4
20	22 49.3	16.0	2 16.0	136.5	0.4628	0.3712	20 52.3
30	23 5.3	15.6	N. 0 0.5	138.9	0.4464	0.3679	20 28.8
May 10	23 20.9	15.1	2 19.4	140.5	0.4285	0.3646	20 5.0
20	23 36.0	14.5	4 39.9	141.5	0.4091	0.3615	19 40.6
30	23 50.5	14.0	7 1.4	141.7	0.3883	0.3584	19 15.8
June 9	0 4.5	13.3	9 23.1	141.2	0.3661	0.3555	18 50.4
19	0 17.8	12.4	11 44.3	139.8	0.3425	0.3526	18 24.2
29	0 30.2	11.3	14 4.1	137.3	0.3175	0.3499	17 57.1
July 9	0 41.5	10.0	16 21.4	133.8	0.2912	0.3474	17 29.0
19	0 51.5	8.3	18 35.2	128.6	0.2638	0.3450	16 59.5
29	0 59.8	6.3	20 43.8	121.3	0.2355	0.3428	16 28.3
Aug. 8	1 6.1	3.9	22 45.1	111.0	0.2067	0.3407	15 55.2
18	1 10.0	+1.1	24 36.1	96.8	0.1781	0.3388	15 19.5
28	1 11.1	2.0	26 12.9	77.0	0.1504	0.3372	14 41.1
Sept. 7	1 9.1	5.0	27 29.9	51.0	0.1249	0.3357	13 59.7
17	1 4.1	7.5	28 20.9	19.4	0.1032	0.3345	13 15.2
27	0 56.6	9.0	28 40.3	-15.4	0.0868	0.3335	12 28.3
Oct. 7	0 47.6	9.0	28 24.9	47.5	0.0776	0.3327	11 39.9
17	0 38.6	7.5	27 37.4	71.5	0.0765	0.3322	10 51.7
27	0 31.1	4.8	26 25.9	83.5	0.0836	0.3319	10 5.1
Nov. 6	0 26.3	-1.4	25 2.4	82.8	0.0982	0.3319	9 21.1
16	0 24.9	2.0	23 39.6	72.6	0.1189	0.3320	8 40.5
26	0 26.9	5.3	22 27.0	56.2	0.1440	0.3325	8 3.3
Dec. 6	0 32.2	8.1	21 30.8	37.5	0.1717	0.3332	7 29.4
16	0 40.3	10.6	20 53.3	18.9	0.2008	0.3341	6 58.2
26	0 50.9	+12.7	N. 20 34.4	-2.0	0.2301	0.3352	6 29.5
36	1 3.6		20 32.4		0.2590	0.3366	6 2.9

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.
							Earth.	Sun.	
	Noon.			Noon.			Noon.	Noon.	
	h	m	Δ_1	°	'	Δ_1	Δ_1	Δ_1	h m Δ_1
Jan. 1	3	40.6	1.1	N. 15	11.7	12.4	0.2756	0.4283	8 57.7 -40.3
11	3	39.5	1.6	15	24.1	21.4	3008	4302	8 17.4 37.7
21	3	41.1	4.0	15	45.5	29.1	3275	4321	7 39.7 35.2
31	3	45.1	6.3	16	14.6	34.7	3547	4341	7 4.5 33.0
Feb. 10	3	51.4	8.2	16	49.3	38.3	3814	4361	6 31.5 31.1
20	3	59.6	9.9	17	27.6	40.0	4071	4382	6 0.4 29.4
Mar. 1	4	9.5	11.4	18	7.6	39.9	4314	4402	5 31.0 28.0
11	4	20.9	12.5	18	47.5	38.3	4542	4423	5 3.0 26.9
21	4	33.4	13.5	19	25.8	35.2	4752	4443	4 36.1 25.8
31	4	46.9	14.4	20	1.0	31.2	4946	4464	4 10.3 24.9
Apr. 10	5	1.3	15.1	20	32.2	26.2	5122	4485	3 45.4 24.3
20	5	16.4	15.7	20	58.4	20.0	5280	4506	3 21.1 23.7
30	5	32.1	16.1	21	18.4	14.0	5422	4527	2 57.4 23.3
May 10	5	48.2	16.4	21	32.4	7.0	5547	4547	2 34.1 23.0
20	6	4.6	16.6	21	39.4	0.1	5655	4568	2 11.1 22.8
30	6	21.2	16.7	21	39.3	7.2	5747	4589	1 48.3 22.7
June 9	6	37.9	16.8	21	32.1	14.4	5824	4610	1 25.6 22.6
19	6	54.7	16.7	21	17.7	21.5	5885	4630	1 3.0 22.6
29	7	11.4	16.6	20	56.2	28.0	5930	4650	0 40.4 22.8
July 9	7	28.0	16.4	20	28.2	34.4	5961	4670	0 17.6 25.3
19	7	44.4	16.1	19	53.8	40.1	5976	4690	23 52.3 23.3
29	8	0.5	15.9	19	13.7	45.4	5976	4710	23 29.0 23.6
Aug. 8	8	16.4	15.4	18	28.3	49.8	5960	4729	23 5.4 24.0
18	8	31.8	15.0	17	38.5	53.7	5929	4749	22 41.4 24.5
28	8	46.8	14.5	16	44.8	56.5	5882	4768	22 16.9 25.0
Sept. 7	9	1.3	13.9	15	48.3	58.5	5819	4786	21 51.9 25.5
17	9	15.2	13.2	14	49.8	59.4	5740	4805	21 26.4 26.1
27	9	28.4	12.6	13	50.4	59.3	5644	4823	21 0.3 26.9
Oct. 7	9	41.0	11.8	12	51.1	58.0	5531	4840	20 33.4 27.7
17	9	52.8	10.8	11	53.1	55.3	5401	4858	20 5.7 28.6
27	10	3.6	9.8	10	57.8	51.2	5255	4875	19 37.1 29.6
Nov. 6	10	13.4	8.6	10	6.6	45.4	5093	4891	19 7.5 30.9
16	10	22.0	7.2	9	21.2	38.3	4916	4908	18 36.6 32.3
26	10	29.2	5.6	8	42.9	29.1	4726	4924	18 4.3 33.8
Dec. 6	10	34.8	3.8	8	13.8	18.4	4525	4939	17 30.5 35.7
16	10	38.6	1.9	7	55.4	6.1	4319	4954	16 54.8 37.6
26	10	40.5	0.2	7	49.3	7.1	4113	4969	16 17.2 -39.7
36	10	40.2		N. 7	56.4	7.1	4016	4082	16 27.5 -39.7

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.
							Earth.	Sun.	
	Noon.			Noon.			Noon.	Noon.	
	h	m	Δ_1	S.	°	Δ_1	Δ_1	Δ_1	h m. Δ_1
Jan. 1	13	4.5	+11.5	2	16.2	41.4	0.3626	0.3836	18 21.1 -28.0
11	13	16.0	10.0	2	57.6	28.6	0.3350	0.3811	17 53.1 29.5
21	13	26.9	8.3	3	26.2	14.3	0.3059	0.3786	17 23.6 31.2
31	13	34.3	6.2	3	40.5	+1.8	0.2755	0.3761	16 52.4 33.2
Feb. 10	13	40.5	3.9	3	38.7	18.4	0.2444	0.3736	16 19.2 35.6
20	13	44.4	+1.1	3	20.3	35.4	0.2135	0.3711	15 43.6 38.5
Mar. 1	13	45.5	1.8	2	44.9	51.0	0.1837	0.3686	15 5.1 41.3
11	13	43.7	4.4	1	53.9	63.8	0.1569	0.3662	14 23.8 43.8
21	13	39.3	6.9	S. 0	50.1	69.8	0.1347	0.3638	13 40.0 46.2
31	13	32.4	8.3	N. 0	19.7	67.8	0.1190	0.3614	12 53.8 47.7
Apr. 10	13	24.1	8.7	1	27.5	57.0	0.1111	0.3591	12 6.1 47.9
20	13	15.4	7.7	2	24.5	38.8	0.1119	0.3568	11 18.2 46.9
30	13	7.7	5.8	3	3.3	+16.2	0.1205	0.3546	10 31.3 45.1
May 10	13	1.9	3.1	3	19.5	7.7	0.1360	0.3525	9 46.2 42.2
20	12	58.8	0.3	3	11.8	29.1	0.1563	0.3505	9 4.0 39.6
30	12	58.5	+2.4	2	42.7	48.4	0.1796	0.3485	8 24.4 36.8
June 9	13	0.9	5.0	1	54.3	64.4	0.2047	0.3467	7 47.6 34.2
19	13	5.9	7.4	N. 0	49.9	77.1	0.2302	0.3449	7 13.4 32.0
29	13	13.3	9.3	S. 0	27.2	87.0	0.2555	0.3433	6 41.4 29.9
July 9	13	22.6	11.1	1	54.2	94.5	0.2799	0.3418	6 11.5 28.3
19	13	33.7	12.7	3	28.7	99.5	0.3032	0.3403	5 43.2 26.7
29	13	46.4	14.0	5	8.2	102.7	0.3253	0.3391	5 16.5 25.3
Aug. 8	14	0.4	15.2	6	50.9	103.8	0.3460	0.3379	4 51.2 24.1
18	14	15.6	16.4	8	34.7	103.4	0.3654	0.3370	4 27.1 23.1
28	14	32.0	17.3	10	18.1	101.2	0.3833	0.3361	4 4.0 22.0
Sept. 7	14	49.3	18.3	11	59.3	97.6	0.3999	0.3354	3 42.0 21.1
17	15	7.6	19.1	13	36.9	92.2	0.4152	0.3349	3 20.9 20.3
27	15	26.7	20.0	15	9.1	85.4	0.4291	0.3345	3 0.6 19.4
Oct. 7	15	46.7	20.7	16	34.5	77.1	0.4418	0.3343	2 41.2 18.7
17	16	7.4	21.3	17	51.6	67.7	0.4532	0.3343	2 22.5 18.0
27	16	28.7	22.0	18	59.3	57.0	0.4634	0.3344	2 4.5 17.5
Nov. 6	16	50.7	22.4	19	56.3	45.3	0.4724	0.3347	1 47.0 17.0
16	17	13.1	22.8	20	41.6	32.8	0.4801	0.3351	1 30.0 16.6
26	17	35.9	23.1	21	14.4	20.1	0.4866	0.3357	1 13.4 16.3
Dec. 6	17	59.0	23.2	21	34.5	6.3	0.4920	0.3364	0 57.1 16.2
16	18	22.2	23.2	21	40.8	+6.5	0.4961	0.3373	0 40.9 16.2
26	18	45.4	+23.1	21	34.3	19.4	0.4991	0.3384	0 24.7 -16.3
36	19	8.5		S. 21	14.9		0.5008	0.3396	0 8.4

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.
							Earth.	Sun.	
	Noon.			Noon.			Noon.	Noon.	
	^h	^m	^Δ	^h	^m	^Δ	^Δ	^Δ	^h ^m ^Δ
Jan. 1	18	35.6	+21.6	S. 17	34.6	+11.2	0.5093	0.3532	23 52.5
11	18	57.2	21.7	17	23.4	11.2	0.5048	0.3484	23 34.7
21	19	18.9	21.8	17	0.8	22.6	0.4988	0.3434	23 17.0
31	19	40.7	21.9	16	26.8	34.0	0.4914	0.3384	22 59.4
Feb. 10	20	2.6	21.8	15	41.8	45.0	0.4826	0.3334	22 41.9
20	20	24.4	21.7	14	46.5	55.3	0.4724	0.3283	22 24.3
Mar. 1	20	46.1	21.7	13	41.7	64.8	0.4608	0.3231	22 6.6
11	21	7.8	21.7	12	28.3	73.4	0.4479	0.3180	21 48.8
21	21	29.3	21.5	11	7.6	80.7	0.4337	0.3129	21 30.9
31	21	50.6	21.3	9	40.7	86.9	0.4182	0.3078	21 12.8
Apr. 10	22	11.8	21.2	8	9.0	91.7	0.4014	0.3028	20 54.6
20	22	32.8	21.0	6	34.0	95.0	0.3833	0.2979	20 36.2
30	22	53.6	20.8	4	57.4	96.6	0.3639	0.2931	20 17.6
May 10	23	14.3	20.7	3	20.9	96.5	0.3432	0.2884	19 58.9
20	23	34.8	20.5	1	46.3	94.6	0.3213	0.2839	19 40.0
30	23	55.2	20.4	S. 0	15.6	90.7	0.2981	0.2796	19 20.9
June 9	0	15.3	20.1	N. 1	9.1	84.7	0.2736	0.2755	19 1.6
19	0	35.2	19.9	2	25.5	76.4	0.2478	0.2717	18 42.0
29	0	54.6	19.4	3	31.4	65.9	0.2208	0.2682	18 22.1
July 9	1	13.5	18.9	4	24.1	52.7	0.1924	0.2651	18 1.6
19	1	31.7	18.2	5	1.2	37.1	0.1628	0.2623	17 40.3
29	1	48.9	17.2	5	20.2	19.0	0.1322	0.2599	17 18.0
Aug. 8	2	4.7	15.8	5	18.6	1.6	0.1006	0.2579	16 54.3
18	2	18.8	14.1	4	54.3	24.3	0.0686	0.2564	16 28.8
28	2	30.5	11.7	4	5.8	48.5	0.0366	0.2553	16 1.0
Sept. 7	2	39.4	8.9	2	53.0	72.8	0.0058	0.2547	15 30.3
17	2	44.9	5.5	N. 1	17.9	95.1	0.9774	0.2546	14 56.2
27	2	46.7	+1.8	S. 0	34.2	112.1	0.9533	0.2550	14 18.5
Oct. 7	2	44.7	-2.0	2	33.9	119.7	0.9360	0.2558	13 37.0
17	2	39.5	5.2	4	26.9	113.0	0.9274	0.2571	12 52.3
27	2	32.2	7.3	5	57.9	91.0	0.9290	0.2589	12 5.7
Nov. 6	2	24.4	7.8	6	53.6	55.7	0.9412	0.2611	11 18.6
16	2	17.8	6.6	7	7.8	-14.2	0.9624	0.2616	10 32.8
26	2	13.6	4.2	6	41.7	+26.1	0.9907	0.2666	9 49.5
Dec. 6	2	12.5	-1.1	5	40.9	60.8	0.0237	0.2699	9 9.2
16	2	14.7	+2.2	4	13.9	87.0	0.0593	0.2736	8 32.2
26	2	20.0	5.3	2	28.6	105.3	0.0959	0.2775	7 58.2
36	2	28.0	+8.0	S. 0	31.8	+116.8	0.1324	0.2817	7 26.9

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.
							Earth.	Sun.	
	Noon.			Noon.			Noon.	Noon.	
Jan. 1	h	m	Δ_1	S. 21	38.2	Δ_1	0.5393	0.3948	h m Δ_1
11	19	1.6	19.9	21	3.3	34.9	0.5375	0.3918	0 20.2
21	19	21.5	19.9	20	18.9	44.4	0.5342	0.3887	19.5
31	19	41.4	19.8	19	25.2	53.7	0.5293	0.3856	19.6
	20	1.2	19.7			62.5			19.7
Feb. 10	20	20.9	19.5	18	22.7	70.7	0.5229	0.3825	23 0.0
20	20	40.4	19.2	17	12.0	78.1	0.5149	0.3793	20.0
Mar. 1	20	59.6	18.8	15	53.9	84.7	0.5055	0.3761	20.2
11	21	18.4	18.5	14	29.2	90.3	0.4945	0.3729	20.6
			18.2	12	58.9	94.9	0.4820	0.3696	20.9
21	21	36.9	17.7	11	24.0	98.6	0.4680	0.3664	21.3
31	21	55.1	17.2	9	45.4	100.9	0.4525	0.3631	21.7
Apr. 10	22	12.8	16.8	8	4.5	102.3	0.4354	0.3599	22.2
20	22	30.0	16.3	6	22.2	102.4	0.4168	0.3567	22.6
			15.7	4	39.8	101.1	0.3965	0.3535	23.2
30	22	46.8	15.1	2	58.7	98.8	0.3748	0.3504	23.7
May 10	23	3.1	14.2	S. 1	19.9	94.7	0.3513	0.3473	24.4
20	23	18.8	13.4	N. 0	14.8	89.3	0.3263	0.3442	25.2
30	23	33.9	12.4	1	44.1	82.3	0.2996	0.3412	26.0
June 9	23	48.1	11.0	3	6.4	73.3	0.2713	0.3383	27.2
19	0	1.5	9.5	4	19.7	62.3	0.2416	0.3356	28.4
29	0	13.9	7.5	5	22.0	49.2	0.2107	0.3329	30.1
July 9	0	24.9	5.2	6	11.2	33.6	0.1789	0.3303	31.9
			4.3	6	44.8	15.7	0.1470	0.3279	34.3
19	0	34.4	3.4	7	0.5	4.3	0.1159	0.3256	37.0
29	0	41.9	2.5	6	56.2	23.1	0.0870	0.3235	39.9
Aug. 8	0	47.1	1.5	6	31.1	44.3	0.0622	0.3215	42.8
18	0	49.6	0.3	5	46.8	58.6	0.0438	0.3197	45.4
				4	48.2	64.8	0.0330	0.3182	47.1
28	0	49.3	3.4	3	43.4	60.8	0.0333	0.3168	47.6
Sept. 7	0	45.9	6.0	2	42.6	47.9	0.0425	0.3156	46.7
17	0	39.9	7.8	1	54.7	28.8	0.0600	0.3147	44.5
27	0	32.1	8.3	1	25.9	7.0	0.0840	0.3139	41.6
				1	18.9	14.2	0.1120	0.3134	38.5
Oct. 7	0	23.8	7.5	1	33.1	34.0	0.1422	0.3131	35.4
17	0	16.3	5.3	2	7.1	51.0	0.1731	0.3131	32.6
27	0	11.0	4.5	2	58.1	65.0	0.2038	0.3133	30.3
Nov. 6	0	8.5	3.8	4	3.1	76.1	0.2337	0.3137	28.1
			2.5	5	19.2	76.1	0.2621	0.3144	26.3
16	0	9.3	1.5						
26	0	13.1	0.8						
Dec. 6	0	19.8	0.3						
16	0	28.9	0.1						
			11.2						
26	0	40.1	13.0						
36	0	53.1	13.0						

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.		Declination.		Log. of Distance from the		Meridian Passage.
					Earth.	Sun.	
	Noon.		Noon.		Noon.	Noon.	
Jan. 1	h m Δ ₁ 20 51.6 +16.7		S. 17 8.6 +69.5		Δ ₁ 0.5364 +65	Δ ₁ 0.4209 -18	h m Δ ₁ 2 10.0 -22.6
11	21 8.3 +16.9		15 59.1 +76.0		0.5429 +48	0.4191 -19	1 47.4 -22.5
21	21 25.2 +16.9		14 43.1 +82.2		0.5477 +31	0.4172 -20	1 24.9 -22.5
31	21 42.1 +16.9		13 20.9 +87.6		0.5508 +14	0.4152 -21	1 2.4 -22.5
Feb. 10	21 59.0 +17.0		11 53.3 +92.5		0.5522 -2	0.4131 -22	0 39.9 -22.4
20	22 16.0 +16.8		10 20.8 +96.5		0.5520 -18	0.4109 -23	0 17.5 -24.8
Mar. 1	22 32.8 +16.6		8 44.3 +99.9		0.5502 -34	0.4086 -23	23 52.7 -22.7
11	22 49.6 +16.6		7 4.4 +102.5		0.5468 -51	0.4063 -23	23 30.0 -22.7
21	23 6.2 +16.6		5 21.9 +104.1		0.5417 -65	0.4040 -25	23 7.3 -22.9
31	23 22.8 +16.4		3 37.8 +105.2		0.5352 -82	0.4015 -25	22 44.4 -22.9
Apr. 10	23 39.2 +16.3		1 52.6 +105.1		0.5270 -97	0.3990 -26	22 21.5 -23.1
20	23 55.5 +16.2		S. 0 7.5 +104.6		0.5173 -113	0.3964 -26	21 58.4 -23.2
30	0 11.7 +16.0		N. 1 37.1 +103.0		0.5060 -129	0.3938 -27	21 35.2 -23.4
May 10	0 27.7 +15.8		3 20.1 +100.5		0.4931 -145	0.3911 -28	21 11.8 -23.6
20	0 43.5 +15.7		5 0.6 +97.7		0.4786 -161	0.3883 -28	20 48.2 -23.8
30	0 59.2 +15.3		6 38.3 +93.1		0.4625 -178	0.3855 -28	20 24.4 -24.0
June 9	1 14.5 +15.1		8 11.4 +88.6		0.4447 -195	0.3827 -29	20 0.4 -24.4
19	1 29.6 +14.6		9 40.0 +83.1		0.4252 -212	0.3798 -29	19 36.0 -24.8
29	1 44.2 +14.1		11 3.1 +76.6		0.4040 -229	0.3769 -29	19 11.2 -25.3
July 9	1 58.3 +13.4		12 19.7 +69.6		0.3811 -248	0.3740 -30	18 45.9 -26.1
19	2 11.7 +12.5		13 29.3 +61.6		0.3563 -265	0.3710 -30	18 19.8 -26.9
29	2 24.2 +11.3		14 30.9 +53.0		0.3298 -281	0.3680 -30	17 52.9 -28.2
Aug. 8	2 35.5 +9.9		15 23.9 +43.5		0.3017 -297	0.3650 -29	17 24.7 -29.6
18	2 45.4 +8.0		16 7.4 +33.2		0.2720 -310	0.3621 -30	16 55.1 -31.5
28	2 53.4 +5.8		16 40.6 +22.0		0.2410 -317	0.3591 -30	16 23.6 -33.7
Sept. 7	2 59.2 +3.1		17 2.6 +9.8		0.2093 -315	0.3561 -30	15 49.9 -36.4
17	3 2.3 +0.0		17 12.4 -3.2		0.1778 -302	0.3531 -29	15 13.5 -39.5
27	3 2.3 -3.1		17 9.2 -17.3		0.1476 -273	0.3502 -28	14 34.0 -42.6
Oct. 7	2 59.2 +6.2		16 51.9 +30.8		0.1203 -222	0.3474 -29	13 51.4 -45.6
17	2 53.0 +8.5		16 21.1 +42.6		0.0981 -150	0.3445 -27	13 5.8 -47.9
27	2 44.5 +9.7		15 38.5 +49.5		0.0831 -62	0.3418 -27	12 17.9 -49.0
Nov. 6	2 34.8 +9.5		14 49.0 +49.5		0.0769 +32	0.3391 -26	11 28.9 -48.7
16	2 25.3 +7.7		13 59.5 +41.8		0.0801 -120	0.3365 -25	10 40.2 -46.9
26	2 17.6 +5.0		13 17.7 +27.8		0.0921 -189	0.3340 -24	9 53.3 -44.1
Dec. 6	2 12.6 -1.6		12 49.9 -10.2		0.1110 -239	0.3316 -23	9 9.2 -40.9
16	2 11.0 +1.7		12 39.7 +7.8		0.1349 -267	0.3293 -22	8 28.3 -37.4
26	2 12.7 +4.9		12 47.5 +24.6		0.1616 -280	0.3271 -20	7 50.9 -34.3
36	2 17.6 +4.9		N. 13 12.1 +24.6		0.1896 +180	0.3251 -20	7 16.6 -34.3

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.		Declination.		Log. of Distance from the.				Meridian Passage.		
					Earth.		Sun.				
	Noon.		Noon.		Noon.		Noon.				
	h	m	Δ_1	Δ_1	Δ_1	Δ_1	Δ_1	Δ_1	h	m	Δ_1
Jan. 1	20	55.8	+22.8	S. 19 26.8	+97.1	0.4507	+82	0.3095	1	14.3	-16.6
11	21	18.6	+22.6	17 49.7	+106.7	0.4589	+70	0.3096	1	57.7	16.8
21	21	41.2	+22.2	16 3.0	+114.8	0.4659	60	0.3098	2	40.9	17.2
31	22	3.4	+22.0	14 8.2	+122.0	0.4719	49	0.3103	5	23.7	17.5
Feb. 10	22	25.4	+21.5	12 6.2	+126.6	0.4768	39	0.3111	8	6.2	17.8
20	22	46.9	+21.3	9 59.6	+130.7	0.4807	28	0.3121	10	48.4	18.1
Mar. 1	23	8.2	+21.1	7 48.9	+133.7	0.4835	18	0.3133	12	30.3	18.4
11	23	29.3	+20.6	5 35.2	+134.2	0.4853	+8	0.3147	14	11.9	18.4
21	23	49.9	+20.5	3 21.0	+132.5	0.4861	-2	0.3164	17	51.3	20.6
31	0	10.4	+20.3	S. 1 8.5	+131.6	0.4859	13	0.3182	18	32.4	18.9
Apr. 10	0	30.7	+20.0	N. 1 3.1	+128.5	0.4846	23	0.3202	20	13.2	19.3
20	0	50.7	+19.9	3 11.6	+124.3	0.4823	34	0.3225	23	53.9	19.3
30	1	10.6	+19.7	5 15.9	+119.4	0.4789	45	0.3249	24	34.3	19.6
May 10	1	30.3	+19.6	7 15.3	+112.6	0.4744	56	0.3274	25	14.6	19.7
20	1	49.9	+19.3	9 7.9	+105.8	0.4688	68	0.3301	27	54.8	19.8
30	2	9.2	+19.1	10 53.7	+98.1	0.4620	81	0.3329	28	34.7	20.1
June 9	2	28.3	+18.8	12 31.8	+89.6	0.4539	94	0.3358	29	14.4	20.3
19	2	47.1	+18.5	14 1.4	+80.9	0.4445	106	0.3388	30	53.7	20.7
29	3	5.6	+18.0	15 22.3	+71.8	0.4339	122	0.3419	31	32.7	21.0
July 9	3	23.6	+17.4	16 34.1	+62.6	0.4217	136	0.3451	32	11.3	21.4
19	3	41.0	+16.6	17 36.7	+53.6	0.4081	150	0.3483	32	49.3	22.0
29	3	57.6	+15.8	18 30.3	+45.0	0.3931	168	0.3516	33	26.5	22.8
Aug. 8	4	13.4	+14.6	19 15.3	+36.5	0.3763	183	0.3549	33	2.8	23.7
18	4	28.0	+13.4	19 51.8	+28.9	0.3580	198	0.3582	33	37.9	24.9
28	4	41.2	+11.5	20 20.7	+22.5	0.3382	213	0.3616	34	11.6	26.3
Sept. 7	4	52.7	+9.5	20 43.2	+16.8	0.3169	225	0.3650	34	43.6	28.0
17	5	2.2	+7.1	21 0.0	+12.6	0.2944	234	0.3683	33	13.6	30.0
27	5	9.3	+4.3	21 12.6	+9.0	0.2710	236	0.3717	34	41.1	32.5
Oct. 7	5	13.6	+1.1	21 21.6	+6.4	0.2474	229	0.3750	33	5.8	35.3
17	5	14.7	+2.2	21 28.0	+4.3	0.2245	208	0.3783	33	27.4	38.4
27	5	12.5	+5.5	21 32.3	+1.8	0.2037	172	0.3816	33	45.8	41.6
Nov. 6	5	7.0	+8.4	21 34.1	+1.2	0.1865	112	0.3848	32	0.8	45.0
16	4	58.6	+10.5	21 32.9	+4.7	0.1753	43	0.3881	33	12.9	47.9
26	4	48.1	+11.1	21 28.2	+7.4	0.1710	38	0.3912	31	23.2	49.7
Dec. 6	4	37.0	+10.5	21 20.8	+8.3	0.1748	120	0.3943	31	32.7	50.5
16	4	26.5	+8.5	21 12.5	+6.5	0.1868	189	0.3973	30	43.1	49.6
26	4	18.0	+5.8	21 6.0	+1.8	0.2057	+244	0.4003	80	55.4	47.7
36	4	12.2	+5.8	N. 21 4.2	-1.8	0.2301	+244	0.4032	+29	10.5	44.9

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.
							Earth.	Sun.	
	Noon.			Noon.			Noon.	Noon.	
	h	m	Δ_1	Δ_1	Δ_1	Δ_1	Δ_1	Δ_1	h m Δ_1
Jan. 1	19	2' 2	+17' 3	S. 29	14' 3	+13' 2	0.6095	0.4908	10 20' 9
11	19	19' 5	17' 3	29	1' 1	+13' 2	0.6086	0.4897	23 56' 5
21	19	36' 8	17' 1	28	42' 6	18' 5	0.6061	0.4886	11 23 34' 4
31	19	53' 9	16' 9	28	19' 2	23' 4	0.6019	0.4874	12 23 12' 1
Feb. 10	20	10' 8	16' 6	27	51' 7	27' 5	0.5960	0.4862	12 22 49' 6
20	20	27' 4	16' 3	27	20' 9	30' 8	0.5884	0.4850	12 22 26' 8
Mar. 1	20	43' 7	15' 8	26	47' 6	33' 3	0.5792	0.4838	12 22 3' 7
11	20	59' 5	15' 3	26	13' 0	34' 6	0.5684	0.4825	13 21 40' 1
21	21	14' 8	14' 7	25	38' 2	34' 8	0.5559	0.4812	13 21 15' 9
31	21	29' 5	14' 1	25	4' 5	33' 7	0.5418	0.4798	14 20 51' 2
Apr. 10	21	43' 6	13' 3	24	33' 3	31' 2	0.5261	0.4785	13 20 25' 8
20	21	56' 9	12' 4	24	6' 1	27' 2	0.5089	0.4771	14 19 59' 6
30	22	9' 3	11' 4	23	44' 5	21' 6	0.4902	0.4757	14 19 32' 6
May 10	22	20' 7	10' 3	23	30' 3	14' 2	0.4701	0.4742	15 19 4' 6
20	22	31' 0	9' 0	23	25' 0	+5' 2	0.4488	0.4728	14 18 35' 4
30	22	40' 0	7' 5	23	30' 4	-5' 4	0.4265	0.4713	15 18 4' 9
June 9	22	47' 5	5' 7	24	19' 0	30' 9	0.3803	0.4683	15 16 59' 2
19	22	53' 2	3' 8	25	3' 8	44' 8	0.3574	0.4668	15 16 23' 4
29	22	57' 0	+1' 5	26	1' 9	58' 1	0.3357	0.4652	16 15 45' 5
July 9	22	58' 5	-1' 0	27	10' 8	68' 9	0.3162	0.4637	15 15 5' 1
19	22	57' 5	3' 4	28	26' 2	75' 4	0.2998	0.4621	16 14 22' 3
29	22	54' 1	5' 7	29	41' 9	75' 7	0.2878	0.4605	16 13 37' 1
Aug. 8	22	48' 4	7' 6	30	49' 7	67' 8	0.2811	0.4589	16 12 50' 2
18	22	40' 8	8' 7	31	42' 1	52' 4	0.2802	0.4574	15 12 2' 2
28	22	32' 1	8' 8	32	13' 3	31' 2	0.2851	0.4558	16 11 14' 1
Sept. 7	22	23' 3	7' 8	32	20' 2	-6' 9	0.2952	0.4542	16 10 27' 0
17	22	15' 5	6' 1	32	3' 3	+16' 9	0.3097	0.4526	16 9 41' 7
27	22	9' 4	3' 8	31	25' 3	38' 0	0.3274	0.4510	16 8 58' 8
Oct. 7	22	5' 6	-1' 1	30	29' 5	55' 8	0.3472	0.4494	16 8 18' 5
17	22	4' 5	+1' 5	29	19' 7	69' 8	0.3682	0.4478	16 7 40' 8
27	22	6' 0	3' 9	27	58' 9	80' 8	0.3894	0.4463	15 7 5' 4
Nov. 6	22	9' 9	6' 0	26	29' 3	89' 6	0.4103	0.4447	16 6 32' 1
16	22	15' 9	7' 8	24	52' 7	96' 6	0.4304	0.4431	16 6 0' 6
26	22	23' 7	9' 4	23	10' 2	102' 5	0.4495	0.4416	15 5 30' 6
Dec. 6	22	33' 1	10' 6	21	22' 9	107' 3	0.4673	0.4401	15 5 1' 9
16	22	43' 7	11' 6	19	31' 4	111' 5	0.4836	0.4386	15 4 34' 2
26	22	55' 3	+11' 5	18	40' 1	115' 0	0.4988	0.4368	14 4 3' 2

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.		Log. of Distance from the		Meridian Passage.
						Earth.	Sun.	
	Noon.			Noon.		Noon.	Noon.	
	h	m	Δ_1	°	Δ_1	Δ_1	Δ_1	h m Δ_1
Jan. 1	21	31.9	+13.5	S. 23	19.4	+74.5	0.5866	2 50.3 -25.9
11	21	45.4	13.8	22	4.9	77.1	.5945	2 24.4 25.6
21	21	59.2	14.0	20	47.8	80.9	.6005	1 58.8 25.3
31	22	13.2	14.1	19	26.9	82.2	.6048	1 33.5 25.3
Feb. 10	22	27.3	14.2	18	4.7	84.9	.6074	1 8.2 25.3
20	22	41.5	14.2	16	39.8	85.5	.6082	0 42.9 25.2
Mar. 1	22	55.7	14.1	15	14.3	86.6	.6072	0 17.7 27.7
11	23	9.8	14.1	13	47.7	86.5	.6045	23 50.0 25.3
21	23	23.9	13.9	12	21.2	86.0	.6001	23 24.7 25.5
31	23	37.8	13.8	10	55.2	84.8	.5940	22 59.2 25.6
Apr. 10	23	51.6	13.7	9	30.4	82.5	.5862	22 33.6 25.7
20	0	5.3	13.4	8	7.9	79.9	.5767	22 7.9 26.0
30	0	18.7	13.1	6	48.0	76.4	.5655	21 41.9 26.3
May 10	0	31.8	12.8	5	31.6	72.2	.5526	21 15.6 26.6
20	0	44.6	12.5	4	19.4	67.0	.5380	20 49.0 26.9
30	0	57.1	12.0	3	12.4	61.4	.5216	20 22.1 27.5
June 9	1	9.1	11.4	2	11.0	54.6	.5034	19 54.6 28.0
19	1	20.5	10.7	1	16.4	47.1	.4836	19 26.6 28.8
29	1	31.2	9.8	S. 0	29.3	38.9	.4620	18 57.8 29.6
July 9	1	41.0	8.8	N. 0	9.6	29.7	.4387	18 28.2 30.6
19	1	49.8	7.4	0	39.3	19.8	.4138	17 57.6 32.0
29	1	57.2	5.9	0	59.1	+9.2	.3875	17 25.6 33.6
Aug. 8	2	3.1	4.1	1	8.3	-2.2	.3601	16 52.0 35.5
18	2	7.2	+1.8	1	6.1	13.2	.3321	16 16.5 37.5
28	2	9.0	-0.6	0	52.9	23.8	.3040	15 39.0 40.1
Sept. 7	2	8.4	3.1	N. 0	29.1	32.6	.2768	14 58.9 42.6
17	2	5.3	5.7	S. 0	3.5	38.3	.2519	14 16.3 45.1
27	1	59.6	8.0	0	41.8	39.2	.2307	13 31.2 47.4
Oct. 7	1	51.6	9.4	1	21.0	33.8	.2148	12 43.8 48.7
17	1	42.2	9.8	1	54.8	23.0	.2057	11 55.1 49.1
27	1	32.4	9.2	2	17.8	-6.5	.2038	11 6.0 48.4
Nov. 6	1	23.2	7.5	2	24.3	+12.3	.2094	10 17.6 46.6
16	1	15.7	5.0	2	12.0	31.3	.2211	9 31.0 44.3
26	1	10.7	-2.3	1	40.7	49.6	.2378	8 46.7 41.5
Dec. 6	1	8.4	+0.6	S. 0	51.1	65.2	.2576	8 5.2 38.7
16	1	9.0	3.3	N. 0	14.1	78.1	.2792	7 26.5 35.9
26	1	12.3	+5.7	1	32.2	+88.7	.3014	6 50.6 -33.5
36	1	18.0		N. 3	0.9		.3233	6 17.1

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.			
							Earth.	Sun.				
	Noon.			Noon.			Noon.	Noon.				
	h	m	Δ_1 m	S.	o	Δ_1 '	Δ_1	Δ_1	h	m	Δ_1 m	
Jan. 1	21	54.1	+11.4	S. 13	25.9	+64.3	0.6129	+101	0.5424	6	3 12.5	-28.1
11	22	5.5	11.7	12	21.6	66.6	.6230	83	.5418	6	2 44.4	27.6
21	22	17.2	12.0	11	15.0	70.3	.6313	67	.5412	7	2 16.8	27.4
31	22	29.2	12.3	10	4.7	73.5	.6380	49	.5405	7	1 49.4	27.1
Feb. 10	22	41.5	12.3	8	51.2	76.0	.6429	32	.5398	8	1 22.3	27.0
20	22	53.8	12.5	7	35.2	78.0	.6461	15	.5390	7	0 55.3	27.0
Mar. 1	23	6.3	12.4	6	17.2	79.2	.6476	2	.5383	9	0 28.3	26.9
11	23	18.7	12.4	4	58.0	79.9	.6474	19	.5374	8	{ 0 28.3 }	27.0
21	23	31.1	12.3	3	38.1	80.0	.6455	35	.5366	9	23 31.7	27.1
31	23	43.4	12.1	2	18.1	79.4	.6420	52	.5357	9	23 4.6	27.3
Apr. 10	23	55.5	11.9	S. 0	58.7	78.1	.6368	68	.5348	10	22 37.3	27.4
20	0	7.4	11.7	N. 0	19.4	76.3	.6300	84	.5338	10	22 9.9	27.7
30	0	19.1	11.4	1	35.7	73.7	.6216	101	.5328	10	21 42.2	28.1
May 10	0	30.5	11.0	2	49.4	70.5	.6115	117	.5318	10	21 14.1	28.4
20	0	41.5	10.5	3	59.9	66.7	.5998	132	.5308	11	20 45.7	28.9
30	0	52.0	9.9	5	6.6	62.3	.5866	148	.5297	11	20 16.8	29.5
June 9	1	1.9	9.3	6	8.9	57.1	.5718	163	.5286	11	19 47.3	30.2
19	1	11.2	8.4	7	6.0	51.3	.5555	178	.5275	12	19 17.1	30.9
29	1	19.6	7.5	7	57.3	44.6	.5377	191	.5263	12	18 46.2	32.0
July 9	1	27.1	6.4	8	41.9	37.2	.5186	203	.5251	12	18 14.2	33.1
19	1	33.5	4.9	9	19.1	28.9	.4983	212	.5239	13	17 41.1	34.5
29	1	38.4	3.4	9	48.0	19.7	.4771	218	.5226	13	17 6.6	36.0
Aug. 8	1	41.8	+1.7	10	7.7	+9.8	.4553	217	.5213	13	16 30.6	37.8
18	1	43.5	-0.2	10	17.5	+0.8	.4336	210	.5200	14	15 52.8	39.7
28	1	43.3	2.3	10	16.7	11.9	.4126	194	.5186	13	15 13.1	41.6
Sept. 7	1	41.0	4.1	10	4.8	22.8	.3932	167	.5173	14	14 31.5	43.6
17	1	36.9	5.8	9	42.0	32.4	.3765	129	.5159	14	13 47.9	45.1
27	1	31.1	7.0	9	9.6	39.6	.3636	81	.5145	15	13 2.8	46.4
Oct. 7	1	24.1	7.6	8	30.0	43.2	.3555	27	.5130	14	12 16.4	46.8
17	1	16.5	7.4	7	46.8	42.4	.3528	30	.5116	15	11 29.6	46.7
27	1	9.1	6.4	7	4.4	37.1	.3558	84	.5101	16	10 42.9	45.6
Nov. 6	1	2.7	4.9	6	27.3	27.9	.3642	129	.5085	15	9 57.3	44.1
16	0	57.8	3.0	5	59.4	16.3	.3771	163	.5070	15	9 13.2	42.2
26	0	54.8	0.9	5	43.1	3.5	.3934	187	.5055	16	8 31.0	40.1
Dec. 6	0	53.9	+1.1	5	39.6	+9.5	.4121	198	.5039	16	7 50.9	38.2
16	0	55.0	3.2	5	49.1	21.6	.4319	203	.5023	16	7 12.7	36.2
26	0	58.2	4.9	6	10.7	+32.6	.4522	199	.5007	16	6 36.5	34.3
36	1	3.1		N. 6	43.3		0.4721		0.4991		6 2.2	

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.		Log. of Distance from the		Meridian Passage.
						Earth.	Sun.	
	Noon.			Noon.		Noon.	Noon.	
	h	m	Δ_1	°	'	Δ_1	Δ_1	h m Δ_1
Jan. 1	9	52.2	4.3	S. 15	40.2	0.3720	0.4730	15 8.0
11	9	47.9	6.4	16	24.9	3516	4718	14 24.4
21	9	41.5	8.1	16	46.3	3337	4705	13 38.7
31	9	33.4	9.1	16	40.2	3195	4691	12 51.3
Feb. 10	9	24.3	9.2	16	5.1	3100	4675	12 2.9
20	9	15.1	8.3	15	2.1	3059	4658	11 14.7
Mar. 1	9	6.8	6.6	13	36.3	3075	4640	10 26.9
11	9	0.2	4.4	11	55.3	3144	4620	9 41.0
21	8	55.8	1.9	10	8.1	3259	4599	8 57.4
31	8	53.9	1.3	8	21.1	3408	4577	8 16.4
Apr. 10	8	55.2	2.4	6	41.8	3582	4554	7 38.4
20	8	57.6	5.2	5	14.2	3768	4530	7 1.5
30	9	2.8	7.1	4	0.8	3959	4504	6 27.4
May 10	9	9.9	8.7	3	2.3	4148	4476	5 55.2
20	9	18.6	10.1	2	19.1	4332	4448	5 24.6
30	9	28.7	11.3	1	51.1	4503	4418	4 55.4
June 9	9	40.0	12.3	1	36.4	4662	4387	4 27.4
19	9	52.3	13.1	1	35.0	4808	4354	4 0.3
29	10	5.4	13.8	1	45.7	4939	4320	3 34.0
July 9	10	19.2	14.4	2	7.4	5054	4284	3 8.4
19	10	33.6	14.9	2	39.2	5154	4247	2 43.4
29	10	48.5	15.3	3	19.7	5237	4209	2 18.9
Aug. 8	11	3.8	15.8	4	7.8	5305	4170	1 54.9
18	11	19.6	16.2	5	2.9	5357	4129	1 31.4
28	11	35.8	16.6	6	3.5	5393	4086	1 8.2
Sept. 7	11	52.4	16.9	7	8.8	5412	4043	0 45.3
17	12	9.3	17.2	8	17.1	5417	3998	0 22.9
27	12	26.5	17.7	9	27.7	5405	3951	0 2.7
Oct. 7	12	44.2	18.0	10	39.6	5377	3904	23 36.8
17	13	2.2	18.4	11	51.2	5332	3855	23 15.5
27	13	20.6	18.8	13	1.4	5271	3804	22 54.5
Nov. 6	13	39.4	19.1	14	8.6	5193	3753	22 33.9
16	13	58.5	19.5	15	11.6	5098	3701	22 13.7
26	14	18.0	19.8	16	8.8	4985	3647	21 53.8
Dec. 6	14	37.8	20.2	16	58.7	4855	3592	21 34.3
16	14	58.0	20.4	17	39.8	4707	3537	21 15.0
26	15	18.4	20.6	18	10.2	4540	3481	20 56.1
36	15	39.0	20.6	S. 18	28.5	0.4356	0.3424	20 37.3

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.
							Earth.	Sun.	
	Noon.			Noon.			Noon.	Noon.	
Jan. 1	h	m	Δ_1	°	'	Δ_1	Δ_1	Δ_1	h m Δ_1
11	4	11.0	4.7	N. 23	45.3	10.3	0.3034 +188	0.4580 -5	9 27.8 -43.8
21	4	6.3	1.8	23	35.0	4.9	.3222 216	.4575 6	8 44.0 41.0
31	4	4.5	1.0	23	30.1	1.5	.3438 230	.4569 6	8 3.0 38.3
	4	5.5	3.5	23	31.6	7.7	.3668 234	.4563 6	7 24.7 35.7
Feb. 10	4	9.0	5.9	23	39.3	12.8	.3902 230	.4557 7	6 49.0 33.4
20	4	14.9	7.9	23	52.1	16.7	.4132 220	.4550 7	6 15.6 31.4
Mar. 1	4	22.8	9.8	24	8.8	19.1	.4352 208	.4543 8	5 44.2 29.6
11	4	32.6	11.2	24	27.9	19.8	.4560 192	.4535 8	5 14.6 28.1
	4	43.8	12.6	24	47.7	19.0	.4752 176	.4527 8	4 46.5 26.7
31	4	56.4	13.7	25	6.7	17.0	.4928 159	.4519 9	4 19.8 25.7
Apr. 10	5	10.1	14.6	25	23.7	13.7	.5087 141	.4510 9	3 54.1 24.8
20	5	24.7	15.4	25	37.4	9.3	.5228 124	.4501 10	3 29.3 23.9
	5	40.1	16.1	25	46.7	4.1	.5352 107	.4491 10	3 5.4 23.3
May 10	5	56.2	16.6	25	50.8	1.9	.5459 91	.4481 11	2 42.1 22.8
20	6	12.8	17.0	25	48.9	8.3	.5550 74	.4470 10	2 19.3 22.4
30	6	29.8	17.4	25	40.6	15.1	.5624 59	.4460 12	1 56.9 22.0
	6	47.2	17.5	25	25.5	22.3	.5683 43	.4448 11	1 34.9 21.9
June 19	7	4.7	17.6	25	3.2	29.3	.5726 27	.4437 12	1 13.0 21.8
29	7	22.3	17.7	24	33.9	36.4	.5753 +12	.4425 12	0 51.2 21.7
July 9	7	40.0	17.6	23	57.5	43.2	.5765 -2	.4413 13	0 29.5 21.7
	7	57.6	17.6	23	14.3	49.7	.5763 18	.4400 13	20 7.8 24.1
19	8	15.2	17.3	22	24.6	55.7	.5745 34	.4387 13	23 43.7 22.0
Aug. 8	8	32.5	17.2	21	28.9	61.3	.5711 48	.4374 13	23 21.7 22.3
18	8	49.7	16.8	20	27.6	66.0	.5663 64	.4361 14	22 59.4 22.5
	9	6.5	16.6	19	21.6	70.2	.5599 80	.4347 14	22 36.9 22.9
Sept. 7	9	23.1	16.2	18	11.4	73.3	.5519 96	.4333 14	22 14.0 23.2
17	9	39.3	15.8	16	58.1	75.8	.5423 113	.4319 14	21 50.8 23.7
27	9	55.1	15.3	15	42.3	76.9	.5310 130	.4305 14	21 27.1 24.1
	10	10.4	14.8	14	25.4	77.1	.5180 147	.4291 15	21 3.0 24.6
Oct. 17	10	25.2	14.2	13	8.3	76.1	.5033 165	.4276 15	20 38.4 25.3
27	10	39.4	13.5	11	52.2	73.7	.4868 183	.4261 15	20 13.1 25.9
Nov. 6	10	52.9	12.7	10	38.5	69.8	.4685 201	.4246 15	19 47.2 26.8
	11	5.6	11.7	9	28.7	64.6	.4484 220	.4231 15	19 20.4 27.7
16	11	17.3	10.7	8	24.1	57.4	.4264 236	.4216 15	18 52.7 28.8
Dec. 6	11	28.0	9.3	7	26.7	48.7	.4028 253	.4201 16	18 23.9 30.2
16	11	37.3	7.7	6	38.0	38.0	.3775 267	.4185 15	17 53.7 31.7
	11	45.0	5.9	6	0.0	25.6	.3508 -276	.4170 -15	17 22.0 -33.6
26	11	50.9		N. 5	34.4		0.3232	0.4155	16 48.4

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.		Declination.		Log. of Distance from the		Meridian Passage.				
					Earth.	Sun.					
	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.					
	^h	^m	^Δ	[°]	[']	^Δ	^Δ	^h	^m	^Δ	
Jan. 1	18	22.0		S. 23	21.1		0.5716	0.4396	23	38.6	
11	18	39.9	+17.9	23	10.3	+10.8	0.5690	0.4393	23	17.1	-21.5
21	18	57.7	17.8	22	52.1	18.2	0.5647	0.4388	22	55.4	21.7
31	19	15.2	17.5	22	26.9	25.2	0.5585	0.4383	22	33.5	21.9
			17.1			31.5					22.3
Feb. 10	19	32.3		21	55.4		0.5506	0.4376	22	11.8	
20	19	49.1	16.8	21	18.1	37.3	0.5408	0.4368	21	48.5	22.7
Mar. 1	20	5.3	16.2	20	36.0	42.1	0.5293	0.4360	21	25.3	23.2
11	20	20.9	15.6	19	50.1	45.9	0.5160	0.4350	21	1.4	23.9
			14.9			48.6					24.5
21	20	35.8		19	1.5	50.3	0.5008	0.4339	20	36.9	
31	20	49.9	14.1	18	11.2	50.3	0.4838	0.4327	20	11.6	25.3
Apr. 10	21	3.2	13.3	17	20.7	50.5	0.4650	0.4314	19	45.4	26.2
20	21	15.5	12.3	16	31.5	49.2	0.4444	0.4300	19	18.2	27.2
			11.1			46.6					28.3
30	21	26.6		15	44.9		0.4220	0.4284	18	49.9	
May 10	21	36.5	9.9	15	2.8	42.1	0.3980	0.4268	18	20.3	29.6
20	21	44.9	8.4	14	27.1	35.7	0.3724	0.4251	17	49.2	31.1
30	21	51.6	6.7	13	59.6	27.5	0.3456	0.4232	17	16.4	32.8
			4.7			17.2					34.7
June 9	21	56.3		13	42.4	+5.0	0.3180	0.4213	16	41.7	
19	21	58.9	2.6	13	37.4	+8.4	0.2902	0.4192	16	4.8	36.9
29	21	59.0	+0.1	13	45.8	-8.4	0.2630	0.4171	15	25.3	39.5
July 9	21	56.4	-2.6	14	.8.5	22.7	0.2378	0.4148	14	43.3	42.0
			5.1			36.2					44.5
19	21	51.3		14	44.7	46.7	0.2159	0.4124	13	58.8	
29	21	43.8	7.5	15	31.4	52.3	0.1990	0.4100	13	11.9	46.9
Aug. 8	21	34.6	9.2	16	23.7	52.0	0.1886	0.4074	12	23.4	48.5
18	21	24.7	9.9	17	15.7	45.9	0.1857	0.4048	11	34.2	49.2
			9.5			34.8	+46				48.7
28	21	15.2		18	1.6	34.8	0.1903	0.4020	10	45.5	
Sept. 7	21	7.3	7.9	18	36.4	21.8	0.2018	0.3991	9	58.4	47.1
17	21	1.8	5.5	18	58.2	-8.1	0.2186	0.3962	9	13.7	44.7
27	20	59.1	-2.7	19	6.3	+5.6	0.2392	0.3931	8	31.8	41.9
			+0.4								38.8
Oct. 7	20	59.5		19	0.7	17.9	0.2622	0.3900	7	53.0	
17	21	2.8	3.3	18	42.8	29.6	0.2860	0.3867	7	17.0	36.0
27	21	8.6	5.8	18	13.2	40.6	0.3098	0.3834	6	43.6	33.4
Nov. 6	21	16.8	8.2	17	32.6	50.9	0.3329	0.3800	6	12.5	31.1
			10.1			60.8					29.2
16	21	26.9		16	41.7	70.3	0.3547	0.3766	5	43.3	
26	21	38.7	11.8	15	40.9	87.6	0.3752	0.3730	5	15.7	27.6
Dec. 6	21	51.8	13.1	14	30.6		0.3940	0.3694	4	49.5	26.2
16	22	6.1	14.3	13	11.3		0.4110	0.3658	4	24.4	25.1
			15.2								24.2
26	22	21.3		11	43.7		0.4263	0.3621	4	0.2	
36	22	37.2	+15.9	S. 10	8.2	+95.5	0.4399	0.3583	3	36.7	-23.5

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.		Log. of Distance from the				Meridian Passage.
						Earth.		Sun.		
	Noon.			Noon.		Noon.		Noon.		
	h	m	Δ_1	°	Δ_1	Δ_1	Δ_1	h	m	Δ_1
Jan. 1	19	55.7	+14.8	S. 17	59.1	0.6159	0.5057	1	14.2	-24.6
11	20	10.5	+14.7	17	27.9	0.6196	0.5057	0	49.6	-24.6
21	20	25.2	+14.7	16	51.1	0.6216	0.5056	0	25.0	-24.7
31	20	39.9	+14.6	16	9.1	0.6217	0.5055	{ 0 25.0 }	{ 0 25.0 }	-24.7
Feb. 10	20	54.5	+14.3	15	22.8	0.6201	0.5053	2	33.0	-24.8
20	21	8.8	+14.0	14	32.6	0.6168	0.5050	3	7.9	-25.1
Mar. 1	21	22.8	+13.7	13	39.5	0.6118	0.5046	4	42.5	-25.4
11	21	36.5	+13.2	12	44.3	0.6050	0.5043	3	16.7	-25.8
21	21	49.7	+12.8	11	47.9	0.5965	0.5038	5	50.6	-26.1
31	22	2.5	+12.2	10	51.3	0.5862	0.5033	5	23.9	-26.7
Apr. 10	22	14.7	+11.7	9	55.6	0.5743	0.5027	6	56.7	-27.2
20	22	26.4	+10.9	9	1.8	0.5606	0.5021	6	28.9	-27.8
30	22	37.3	+10.2	8	11.7	0.5453	0.5014	7	0.5	-28.4
May 10	22	47.5	+9.2	7	24.9	0.5284	0.5006	8	31.2	-29.3
20	22	56.7	+8.2	6	44.2	0.5099	0.4998	8	0.9	-30.3
30	23	4.9	+7.0	6	10.7	0.4900	0.4990	8	29.7	-31.2
June 9	23	11.9	+5.6	5	46.1	0.4688	0.4980	10	57.3	-32.4
19	23	17.5	+4.1	5	31.8	0.4466	0.4970	10	23.4	-33.9
29	23	21.6	+2.3	5	29.3	0.4239	0.4960	11	48.0	-35.4
July 9	23	23.9	+0.3	5	40.5	0.4010	0.4949	11	10.9	-37.1
19	23	24.2	-1.5	6	6.1	0.3788	0.4937	12	31.9	-39.0
29	23	22.7	-3.6	6	46.4	0.3582	0.4925	12	50.8	-41.1
Aug. 8	23	19.1	-5.5	7	40.6	0.3405	0.4912	13	7.8	-43.0
18	23	13.6	-6.8	8	46.0	0.3266	0.4898	14	23.0	-44.8
28	23	6.8	-7.6	9	58.4	0.3178	0.4884	14	36.8	-46.2
Sept. 7	22	59.2	-7.5	11	12.0	0.3149	0.4870	14	49.9	-46.9
17	22	51.7	-6.7	12	20.6	0.3180	0.4854	16	3.1	-46.8
27	22	45.0	-5.3	13	18.6	0.3268	0.4839	15	17.2	-45.9
Oct. 7	22	39.7	-3.3	14	2.5	0.3404	0.4822	17	32.7	-44.5
17	22	36.4	-1.1	14	30.2	0.3576	0.4806	16	8.5	-42.5
27	22	35.3	+1.1	14	41.5	0.3772	0.4788	18	9.9	-40.3
Nov. 6	22	36.4	+3.3	14	37.4	0.3980	0.4770	18	7.3	-38.2
16	22	39.7	+5.2	14	19.0	0.4192	0.4752	18	55.7	-36.0
26	22	44.9	+6.9	13	48.2	0.4401	0.4733	19	21.6	-34.1
Dec. 6	22	51.8	+8.4	13	6.1	0.4601	0.4713	20	49.2	-32.4
16	23	0.2	+9.6	12	14.4	0.4788	0.4693	20	18.2	-31.0
26	23	9.8	+10.7	11	14.3	0.4961	0.4672	21	48.5	-29.7
31	23	14.2	+11.0	10	14.2	0.5137	0.4652	21	4.2	-28.6

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.		Log. of Distance from the				Meridian Passage.
						Earth.		Sun.		
	Noon.			Noon.		Noon.		Noon.		
Jan. 1	h	m	Δ_1	Δ_1		Δ_1		Δ_1		Δ_1
11	21	33.0	+16.7	S. 16	26.1	0.5034	+97	0.4003	-13	2 51.4
21	21	49.7	16.8	14	47.7	.5131	81	.3990	14	2 28.7
31	22	6.5	17.0	13	3.8	.5212	65	.3976	13	2 6.1
	22	23.5	17.0	11	15.1	.5277		.3963		1 43.7
Feb. 10	22	40.5	17.0	9	22.0	.5327	50	.3950	13	
20	22	57.5	17.0	7	25.4	.5361	34	.3937	13	1 21.3
Mar. 1	23	14.5	17.0	5	25.9	.5381	20	.3925	12	0 58.9
11	23	31.5	17.0	3	24.3	.5385	+4	.3912	13	0 36.5
			17.0			122.9	-10		12	0 14.2
21	23	48.5	17.0	S. 1	21.4	.5375		.3900	12	23 49.5
31	0	5.5	17.0	N. 0	42.0	.5351	24	.3888	12	23 27.1
Apr. 10	0	22.5	16.8	2	46.1	.5313	38	.3876	12	23 4.8
20	0	39.3	17.0	4	47.5	.5261	52	.3865	11	23 42.2
			16.8			120.5	66		11	
30	0	56.3	16.8	6	48.0	.5195	80	.3854	11	22 19.7
May 10	1	13.1	16.9	8	46.0	.5115	94	.3843	10	21 57.2
20	1	30.0	16.7	10	41.2	.5021	108	.3833	10	21 34.6
30	1	46.7	16.7	12	32.5	.4913		.3823	10	21 12.0
			16.7			107.0	123		9	
June 9	2	3.4	16.5	14	19.5	.4790	137	.3814	9	20 49.3
19	2	19.9	16.3	16	1.7	.4653	152	.3805	9	20 26.4
29	2	36.2	16.0	17	38.6	.4501	168	.3797	8	20 3.3
July 9	2	52.2	15.6	19	10.0	.4333		.3789	8	19 39.9
			14.9			85.7	183		8	
19	3	7.8	14.9	20	35.7	.4150	199	.3781	6	19 16.0
29	3	22.7	14.2	21	55.7	.3951	216	.3775	6	18 51.5
Aug. 8	3	36.9	13.1	23	9.8	.3735	230	.3769	6	18 26.2
18	3	50.0	11.7	24	18.5	.3505		.3764	5	18 26.2
			10.1			63.6	245		5	17 59.8
28	4	1.7	8.0	25	22.1	.3260	258	.3759	5	17 32.1
Sept. 7	4	11.8	5.5	26	21.1	.3002	267	.3755	4	17 2.7
17	4	19.8	2.4	27	15.8	.2735	272	.3751	4	16 31.2
27	4	25.3		28	6.3	.2463		.3749	2	16 31.2
						45.8	267		2	15 57.1
Oct. 7	4	27.7	0.8	28	52.1	.2196	250	.3747	2	15 57.1
17	4	26.9	4.4	29	31.6	.1946	219	.3745	2	15 20.0
27	4	22.5	7.6	30	2.3	.1727	169	.3745	0	14 39.6
Nov. 6	4	14.9	9.9	30	20.7	.1558		.3745	0	13 55.8
			11.1				101		0	13 8.8
16	4	5.0	10.5	30	23.4	.1457	21	.3745	0	12 19.5
26	3	53.9	8.6	30	9.8	.1436	+63	.3747	2	12 19.5
Dec. 6	3	43.4	5.5	29	42.1	.1499	140	.3749	2	11 29.2
16	3	34.8	2.1	29	6.4	.1639		.3752	3	10 39.4
						36.8	201		3	9 51.7
26	3	29.3		28	29.6	.1840		.3756	4	
36	3	27.2		N. 27	57.7	0.2084	+244	0.3760	+4	9 7.0

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.
							Earth.	Sun.	
	Noon.			Noon.			Noon.	Noon.	
	h	m	Δ_1	°	'	Δ_1	Δ_1	Δ_1	h m Δ_1
Jan. 1	9	25	8.1	N. 17	24.2	24.2	0.1564	0.3660	14 18.4
11	8	54.4	10.1	17	48.4	24.2	0.1431	0.3687	13 30.9
21	8	44.3	10.9	18	18.4	30.0	0.1375	0.3713	12 41.4
31	8	33.4	10.3	18	48.7	30.3	0.1405	0.3739	11 51.3
Feb. 10	8	23.1	8.2	19	14.4	17.8	0.1521	0.3765	11 1.9
20	8	14.9	5.3	19	32.2	8.8	0.1710	0.3790	10 14.5
Mar. 1	8	9.6	2.2	19	41.0	0.2	0.1954	0.3815	9 30.0
11	8	7.4	1.0	19	40.8	8.6	0.2233	0.3840	8 48.6
21	8	8.4	3.9	19	32.2	16.7	0.2529	0.3864	8 10.4
31	8	12.3	6.3	19	15.5	24.2	0.2828	0.3887	7 35.0
Apr. 10	8	18.6	8.4	18	51.3	31.8	0.3122	0.3910	7 2.1
20	8	27.0	10.1	18	19.5	39.0	0.3405	0.3933	6 31.2
30	8	37.1	11.4	17	40.5	46.3	0.3672	0.3955	6 1.9
May 10	8	48.5	12.5	16	54.2	53.4	0.3923	0.3976	5 34.0
20	9	1.0	13.3	16	0.8	60.2	0.4155	0.3996	5 7.1
30	9	14.3	13.9	15	0.6	66.8	0.4369	0.4016	4 41.0
June 9	9	28.2	14.4	13	53.8	73.0	0.4565	0.4036	4 15.6
19	9	42.6	14.8	12	40.8	78.7	0.4742	0.4054	3 50.6
29	9	57.4	15.0	11	22.1	84.1	0.4901	0.4072	3 26.0
July 9	10	12.4	15.2	9	58.0	88.7	0.5044	0.4089	3 1.7
19	10	27.6	15.4	8	29.3	92.9	0.5169	0.4105	2 37.5
29	10	43.0	15.5	6	56.4	96.4	0.5279	0.4120	2 13.5
Aug. 8	10	58.5	15.5	5	20.0	99.3	0.5372	0.4135	1 49.6
18	11	14.0	15.7	3	40.7	101.5	0.5449	0.4149	1 25.8
28	11	29.7	15.6	1	59.2	103.1	0.5510	0.4162	1 2.0
Sept. 7	11	45.3	15.7	N. 0	16.1	104.0	0.5555	0.4174	0 38.3
17	12	1.0	15.7	S. 1	27.9	104.2	0.5584	0.4185	0 14.6
27	12	16.7	15.7	3	12.1	103.6	0.5598	0.4196	23 48.5
Oct. 7	12	32.4	15.8	4	55.7	102.4	0.5595	0.4205	23 24.9
17	12	48.2	15.7	6	38.1	100.5	0.5576	0.4214	23 1.2
27	13	3.9	15.6	8	18.6	97.8	0.5541	0.4223	22 37.5
Nov. 6	13	19.5	15.6	9	56.4	94.5	0.5488	0.4230	22 13.8
16	13	35.1	15.4	11	30.9	90.4	0.5418	0.4236	21 50.0
26	13	50.5	15.3	13	1.3	85.8	0.5331	0.4242	21 26.0
Dec. 6	14	5.8	14.9	14	27.1	80.7	0.5225	0.4246	21 1.8
16	14	20.7	14.6	15	47.8	75.0	0.5102	0.4250	20 37.4
26	14	35.3	14.1	17	2.8	68.8	0.4959	0.4253	20 12.5
36	14	49.4	14.1	S. 18	11.6	61.1	0.4798	0.4255	19 47.2

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.		Declination.	Log. of Distance from the		Meridian Passage.
				Earth.	Sun.	
	Noon.	Noon.		Noon.	Noon.	
Jan. 1	h m Δ ₁ 11 23.6 + ^m _{1.1}	N. 43 15.1 + ^m _{78.7}	0.2860 - Δ ₁	0.4099 + Δ ₁	h m Δ ₁ 16 39.7 - ^m _{38.5}	
11	11 24.7 - 2.9	44 33.8 + 78.7	.2715 - 145	.4121 + 24	16 1.2 - 38.5	
21	11 21.8 - 7.0	45 53.3 79.5	.2601 114	.4145 24	15 18.7 42.5	
31	11 14.8 10.4	47 3.3 70.0	.2530 71	.4170 25	14 32.3 46.4	
Feb. 10	11 4.4 12.7	47 52.0 + 17.2	.2506 + 30	.4196 26	13 42.4 49.9	
20	10 51.7 13.2	48 9.2 - 20.6	.2536 + 83	.4222 26	12 50.4 52.0	
Mar. 1	10 38.5 12.1	47 48.6 - 58.3	.2619 83	.4250 28	11 58.0 52.4	
11	10 26.4 9.4	46 50.3 90.9	.2750 131	.4278 28	11 6.8 51.2	
21	10 17.0 6.3	45 19.4 115.6	.2922 172	.4307 29	10 18.2 48.6	
31	10 10.7 - 2.9	43 23.8 132.1	.3125 203	.4336 29	9 32.8 45.4	
Apr. 10	10 7.8 + 0.2	41 11.7 142.1	.3349 224	.4366 30	9 32.8 42.1	
20	10 8.0 + 2.9	38 49.6 147.2	.3584 235	.4396 30	8 50.7 39.0	
30	10 10.9 5.0	36 22.4 149.2	.3824 240	.4427 31	8 11.7 36.4	
May 10	10 15.9 6.7	33 53.2 149.0	.4062 238	.4447 31	7 35.3 34.3	
20	10 22.6 8.2	31 24.2 147.9	.4294 232	.4458 31	7 1.0 32.5	
30	10 30.8 9.2	28 56.3 146.2	.4518 224	.4489 31	6 28.5 31.2	
June 9	10 40.0 10.0	26 30.1 144.1	.4730 212	.4520 32	5 57.3 30.2	
19	10 50.0 10.7	24 6.0 142.0	.4929 199	.4552 32	5 27.1 29.3	
29	11 0.7 11.2	21 44.0 139.9	.5115 186	.4584 31	4 57.8 28.6	
July 9	11 11.9 11.6	19 24.1 137.7	.5286 171	.4615 32	4 29.2 28.2	
19	11 23.5 11.8	17 6.4 135.4	.5442 156	.4647 31	4 1.0 27.8	
29	11 35.3 12.1	14 51.0 133.2	.5583 141	.4678 32	3 33.2 27.5	
Aug. 8	11 47.4 12.3	12 37.8 130.8	.5708 125	.4710 31	3 5.7 27.3	
18	11 59.7 12.4	10 27.0 128.2	.5818 110	.4741 31	2 38.4 27.1	
28	12 12.1 12.5	8 18.8 125.6	.5911 93	.4772 31	2 11.3 27.0	
Sept. 7	12 24.6 12.5	6 13.2 122.6	.5989 78	.4803 31	1 44.3 26.9	
17	12 37.1 12.6	4 10.6 119.7	.6051 62	.4834 30	1 17.4 26.8	
27	12 49.7 12.5	2 10.9 116.3	.6097 46	.4864 30	0 50.6 26.8	
Oct. 7	13 2.2 12.5	N. 0 14.6 112.8	.6126 + 29	.4894 30	0 23.8 29.5	
17	13 14.7 12.4	S. 1 38.2 109.0	.6138 + 12	.4924 29	23 54.3 26.9	
27	13 27.1 12.2	3 27.2 105.1	.6133 - 5	.4953 29	23 27.4 27.0	
Nov. 6	13 39.3 12.0	5 12.3 100.9	.6110 23	.4982 29	23 0.4 27.2	
16	13 51.3 11.7	6 53.2 96.7	.6070 40	.5011 28	22 33.2 27.4	
26	14 3.0 11.3	8 29.9 92.1	.6013 57	.5039 28	22 5.8 27.7	
Dec. 6	14 14.3 10.8	10 2.0 87.7	.5937 76	.5067 28	21 38.1 28.1	
16	14 25.1 10.1	11 29.7 83.4	.5844 93	.5095 27	21 10.0 28.7	
26	14 35.2 + 9.4	12 53.1 - 78.8	.5733 - 111	.5122 27	20 41.3 29.2	
36	14 44.6 + 9.4	S. 14 11.9 - 78.8	.5605 - 128	.5149 + 26	20 12.1 - 30.1	
				.5175 + 26	19 42.0 - 30.1	

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.		Log. of Distance from the		Meridian. Passage.
						Earth.	Sun.	
	Noon.			Noon.		Noon.	Noon.	
	^h	^m	^{Δ₁} ^m	^{N.}	[°] ['] ^{Δ₂} [']	^{Δ₁}	^{Δ₁}	^h ^m
Jan. 1	10	11'9	1'5	N.	2 55'5	0'2449	0'3924	15 27'9
11	10	10'4	4'2		2 36'9	2185	3910	14 47'0
21	10	6'2	6'6		2 37'3	1953	3897	14 3'4
31	9	59'6	8'2		2 57'3	1772	3885	13 17'4
Feb. 10	9	51'4	8'9		3 35'7	1657	3872	12 29'8
20	9	42'5	8'4		4 27'7	1620	3860	11 41'7
Mar. 1	9	34'1	6'6		5 26'8	1665	3849	10 54'1
11	9	27'5	4'2		6 26'0	1783	3838	10 8'2
21	9	23'3	1'4		7 18'9	1960	3828	9 24'9
31	9	21'9	1'5		8 1'1	2177	3818	8 44'3
Apr. 10	9	23'4	4'3		8 30'1	2420	3809	8 6'6
20	9	27'7	6'6		8 44'9	2673	3800	7 31'6
30	9	34'3	8'7		8 45'6	2927	3792	6 58'9
May 10	9	43'0	10'5		8 32'5	3176	3785	6 28'4
20	9	53'5	11'8		8 6'4	3414	3778	5 59'5
30	10	5'3	13'0		7 28'4	3639	3772	5 32'0
June 9	10	18'3	14'0		6 39'4	3850	3767	5 5'6
19	10	32'3	14'7		5 40'5	4046	3763	4 40'2
29	10	47'0	15'4		4 32'7	4226	3759	4 15'6
July 9	11	2'4	15'9		3 17'1	4392	3756	3 51'6
19	11	18'3	16'3		1 54'8	4542	3754	3 28'1
29	11	34'6	16'7		0 26'8	4678	3752	3 5'0
Aug. 8	11	51'3	17'1		1 5'7	4799	3752	2 42'4
18	12	8'4	17'4		2 41'6	4907	3752	2 20'0
28	12	25'8	17'7		4 19'8	5002	3753	1 58'1
Sept. 7	12	43'5	18'1		5 59'4	5082	3755	1 36'4
17	13	1'6	18'3		7 38'9	5149	3757	1 15'1
27	13	19'9	18'6		9 17'5	5203	3760	0 54'0
Oct. 7	13	38'5	18'9		10 54'1	5244	3764	0 33'2
17	13	57'4	19'1		12 26'9	5271	3769	0 12'7
27	14	16'5	19'4		13 55'6	5285	3775	23 50'4
Nov. 6	14	35'9	19'7		15 18'8	5285	3781	23 30'4
16	14	55'6	19'7		16 35'4	5272	3788	23 10'7
26	15	15'3	19'9		17 44'6	5244	3795	22 51'1
Dec. 6	15	35'2	20'0		18 45'4	5203	3804	22 31'6
16	15	55'2	19'8		19 37'1	5146	3812	22 12'1
26	16	15'0	19'7		20 19'2	5075	3822	21 52'5
36	16	34'7	19'7		20 51'2	4989	3832	21 32'8

MEAN TIME AT GREENWICH.

Month and Day.	Right Ascension.			Declination.		Log. of Distance from the		Meridian Passage.				
						Earth.	Sun.					
	Noon.			Noon.		Noon.	Noon.					
	h	m	Δ_1 m	°	'	Δ_1		Δ_1	h	m	Δ_1 m	
Jan. 1	9	11.2	7.0	N. 18	40.7	32.1	0.4225	86	0.5443	14	27.0	46.2
11	9	4.2	8.3	19	12.8	34.8	0.4139	40	0.5468	13	40.8	47.6
21	8	55.9	8.9	19	47.6	34.1	0.4099	13	0.5493	12	53.2	48.2
31	8	47.0	8.7	20	21.7	29.5	0.4112	66	0.5517	12	5.0	48.0
Feb. 10	8	38.3	7.8	20	51.2	23.2	0.4178	113	0.5540	11	17.0	47.0
20	8	30.5	6.2	21	14.4	15.6	0.4291	133	0.5561	10	30.0	45.4
Mar. 1	8	24.3	4.3	21	30.0	7.8	0.4444	182	0.5582	9	44.6	43.6
11	8	20.0	2.3	21	37.8	0.5	0.4626	201	0.5602	9	1.0	41.4
21	8	17.7	0.1	21	38.3	6.2	0.4827	209	0.5621	8	19.6	39.4
31	8	17.6	1.8	21	32.1	12.2	0.5036	212	0.5640	7	40.2	37.5
Apr. 10	8	19.4	3.5	21	19.9	17.8	0.5248	206	0.5657	7	2.7	35.8
20	8	22.9	5.1	21	2.1	22.8	0.5454	197	0.5674	6	26.9	34.2
30	8	28.0	6.3	20	39.3	27.6	0.5651	186	0.5689	5	52.7	33.0
May 10	8	34.3	7.5	20	11.7	32.1	0.5837	172	0.5704	5	19.7	31.9
20	8	41.8	8.4	19	39.6	36.5	0.6009	156	0.5718	4	47.8	31.0
30	8	50.1	9.1	19	3.1	40.6	0.6165	141	0.5731	4	16.8	30.3
June 9	8	59.2	9.6	18	22.5	44.5	0.6306	124	0.5744	3	46.5	29.7
19	9	8.8	10.1	17	38.0	48.3	0.6430	108	0.5755	3	16.8	29.2
29	9	18.9	10.5	16	49.7	51.7	0.6538	91	0.5766	2	47.6	28.9
July 9	9	29.4	10.7	15	58.0	54.7	0.6629	75	0.5776	2	18.7	28.7
19	9	40.1	10.8	15	3.3	57.6	0.6704	57	0.5785	1	50.0	28.5
29	9	50.9	10.9	14	5.7	59.9	0.6761	41	0.5793	1	21.5	28.5
Aug. 8	10	1.8	11.0	13	5.8	61.9	0.6802	24	0.5800	0	53.0	28.4
18	10	12.8	10.9	12	3.9	63.4	0.6826	7	0.5807	0	24.6	31.3
28	10	23.7	10.9	11	0.5	64.4	0.6833	11	0.5813	23	53.3	28.5
Sept. 7	10	34.6	10.6	9	56.1	64.8	0.6822	27	0.5818	23	24.8	28.7
17	10	45.2	10.5	8	51.3	64.7	0.6795	44	0.5823	22	56.1	29.0
27	10	55.7	10.2	7	46.6	63.8	0.6751	62	0.5826	22	27.1	29.2
Oct. 7	11	5.9	9.7	6	42.8	62.3	0.6689	80	0.5829	21	57.9	29.6
17	11	15.6	9.4	5	40.5	60.0	0.6609	97	0.5831	21	28.3	30.1
27	11	25.0	8.8	4	40.5	56.8	0.6512	114	0.5832	20	58.2	30.6
Nov. 6	11	33.8	8.1	3	43.7	52.8	0.6398	131	0.5833	20	27.6	31.3
16	11	41.9	7.3	2	50.9	47.9	0.6267	147	0.5832	19	56.3	32.1
26	11	49.2	6.4	2	3.0	41.7	0.6120	163	0.5831	19	24.2	33.0
Dec. 6	11	55.6	5.4	1	21.3	34.6	0.5957	176	0.5830	18	51.2	34.1
16	12	1.0	4.0	0	46.7	26.3	0.5781	186	0.5827	18	17.1	35.4
26	12	5.0	2.6	N. 0	20.4	17.0	0.5595	194	0.5824	17	41.7	36.9
36	12	7.6		0	3.4		0.5401		0.5820	17	4.8	

MEAN TIME AT GREENWICH.

Month and Day.	Apparent Right Ascension.				Apparent Declination.				Log. of True Dist. from the Earth.				Meridian Passage.			
	Noon.				Noon.				Noon.							
	h	m	s	Δ_1	°	'	"	Δ_2		Δ_1		h	m	s	Δ_1	
Jan. 1	23	9	14.96	+23.11	S. 6	36	7.3	+152.9	1.481697	+1106	4	27.2	-19.2			
6	23	9	38.07	25.78	6	33	34.4	169.2	.482803	1051	4	8.0	19.3			
11	23	10	3.85	28.32	6	30	45.2	184.7	.483854	988	3	48.7	19.2			
16	23	10	32.17	30.66	6	27	40.5	199.0	.484842	919	3	29.5	19.1			
21	23	11	2.83	32.81	6	24	21.5	211.9	.485761	844	3	10.4	19.2			
26	23	11	35.64	34.76	6	20	49.6	223.5	.486605	764	2	51.2	19.1			
31	23	12	10.40	36.51	6	17	6.1	233.9	.487369	679	2	32.1	19.0			
Feb. 5	23	12	46.91	38.03	6	13	12.2	242.8	.488048	590	2	13.1	19.0			
10	23	13	24.94	39.31	6	9	9.4	250.4	.488638	495	1	54.1	19.0			
15	23	14	4.25	40.37	6	4	59.0	256.4	.489133	400	1	35.1	19.0			
20	23	14	44.62	41.19	6	0	42.6	260.7	.489533	302	1	16.1	19.0			
25	23	15	25.81	41.77	5	56	21.9	263.7	.489835	204	0	57.1	19.0			
Mar. 1	23	16	7.58	42.13	5	51	58.2	265.2	.490039	102	0	38.1	18.9			
6	23	16	49.71	42.23	5	47	33.0	265.1	.490141	2	0	19.2	19.0			
11	23	17	31.94	42.07	5	43	7.9	263.4	.490143	100	{ 0 18.3 }	18.9				
16	23	18	14.01	41.69	5	38	44.5	260.4	.490043	198	23	37.5	19.0			
21	23	18	55.70	41.09	5	34	24.1	255.8	.489845	295	23	18.5	19.0			
26	23	19	36.79	40.27	5	30	8.3	249.8	.489550	391	22	59.5	19.0			
31	23	20	17.06	39.23	5	25	58.5	242.5	.489159	484	22	40.5	19.0			
Apr. 5	23	20	56.29	37.96	5	21	56.0	233.7	.488675	574	22	21.5	19.0			
10	23	21	34.25	36.48	5	18	2.3	223.4	.488101	659	22	2.5	19.1			
15	23	22	10.73	34.81	5	14	18.9	212.3	.487442	740	21	43.4	19.1			
20	23	22	45.54	32.97	5	10	46.6	199.8	.486702	817	21	24.3	19.1			
25	23	23	18.51	30.94	5	7	26.8	186.4	.485885	888	21	5.2	19.2			
30	23	23	49.45	28.76	5	4	20.4	171.7	.484997	953	20	46.0	19.2			
May 5	23	24	18.21	26.41	5	1	28.7	156.2	.484044	1013	20	26.8	19.2			
10	23	24	44.62	23.92	4	58	52.5	139.7	.483031	1065	20	7.6	19.2			
15	23	25	8.54	21.32	4	56	32.8	122.7	.481966	1110	19	48.4	19.3			
20	23	25	29.86	18.62	4	54	30.1	105.1	.480856	1149	19	29.1	19.4			
25	23	25	48.48	15.81	4	52	45.0	87.0	.479707	1180	19	9.7	19.4			
30	23	26	4.29	12.88	4	51	18.0	67.6	.478527	1203	18	50.3	19.5			
June 4	23	26	17.17	9.94	4	50	10.4	48.6	.477324	1217	18	30.8	19.5			
9	23	26	27.11	6.97	4	49	21.8	29.6	.476107	1224	18	11.3	19.5			
14	23	26	34.08	3.99	4	48	52.2	10.5	.474883	1221	17	51.8	19.6			
19	23	26	38.07	+0.95	4	48	41.7	8.9	.473662	1211	17	32.2	19.7			
24	23	26	39.02	-2.03	4	48	50.6	27.9	.472451	1191	17	12.5	19.7			
29	23	26	36.99	-5.02	4	49	18.5	46.8	.471260	1163	16	52.8	19.7			
July 4	23	26	31.97		S. 4	50	5.3		1.470097		16	33.1	-19.7			

MEAN TIME AT GREENWICH.

Month and Day.	Apparent Right Ascension.				Apparent Declination.				Log. of True Dist. from the Earth.				Meridian Passage.			
	Noon.				Noon.				Noon.							
	^h	^m	^s	Δ_1	^h	^m	^s	Δ_1	^h	^m	^s	Δ_1	^h	^m	^s	Δ_1
July 4	23	26	31.97	7.90	S. 4 50 5.3	65.0			1.470097	1127			16 33.1	19.8		
9	23	26	24.07	10.72	4 51 10.3	82.6			.468970	1080			16 13.3	19.9		
14	23	26	13.35	13.40	4 52 32.9	99.3			.467890	1028			15 53.4	19.9		
19	23	25	59.95	15.98	4 54 12.2	115.2			.466862	965			15 33.5	19.9		
24	23	25	43.97	18.40	4 56 7.4	129.9			.465897	897			15 13.6	19.9		
29	23	25	25.57	20.70	4 58 17.3	143.8			.465000	821			14 53.7	20.0		
Aug. 3	23	25	4.87	22.75	5 0 41.1	156.1			.464179	737			14 33.7	20.1		
8	23	24	42.12	24.61	5 3 17.2	167.1			.463442	647			14 13.6	20.1		
13	23	24	17.51	26.23	5 6 4.3	176.3			.462795	551			13 53.5	20.1		
18	23	23	51.28	27.64	5 9 0.6	184.2			.462244	452			13 33.4	20.1		
23	23	23	23.64	28.75	5 12 4.8	190.2			.461792	349			13 13.3	20.1		
28	23	22	54.89	29.63	5 15 15.0	194.6			.461443	239			12 53.2	20.2		
Sept. 2	23	22	25.26	30.20	5 18 29.6	197.1			.461204	130			12 33.0	20.1		
7	23	21	55.06	30.50	5 21 46.7	197.7			.461074	18			12 12.9	20.2		
12	23	21	24.56	30.48	5 25 4.4	196.3			.461056	94			11 52.7	20.2		
17	23	20	54.08	30.14	5 28 20.7	192.7			.461150	205			11 32.5	20.1		
22	23	20	23.94	29.53	5 31 33.4	187.6			.461355	316			11 12.4	20.2		
27	23	19	54.41	28.66	5 34 41.0	180.9			.461671	425			10 52.2	20.1		
Oct. 2	23	19	25.75	27.48	5 37 41.9	172.2			.462096	528			10 32.1	20.1		
7	23	18	58.27	26.00	5 40 34.1	161.6			.462624	630			10 12.0	20.1		
12	23	18	32.27	24.27	5 43 15.7	149.6			.463254	725			9 51.9	20.1		
17	23	18	8.00	22.31	5 45 45.3	136.1			.463979	815			9 31.8	20.0		
22	23	17	45.69	20.13	5 48 1.4	121.3			.464794	898			9 11.8	20.0		
27	23	17	25.56	17.69	5 50 2.7	105.0			.465692	974			8 51.8	19.9		
Nov. 1	23	17	7.87	15.08	5 51 47.7	87.9			.466666	1042			8 31.9	19.9		
6	23	16	52.79	12.30	5 53 15.6	69.4			.467708	1100			8 12.0	19.9		
11	23	16	40.49	9.39	5 54 25.0	50.6			.468808	1151			7 52.1	19.8		
16	23	16	31.10	6.38	5 55 15.6	31.1			.469959	1191			7 32.3	19.7		
21	23	16	24.72	3.28	5 55 46.7	11.1			.471150	1224			7 12.6	19.7		
26	23	16	21.44	0.07	5 55 57.8	9.5			.472374	1245			6 52.9	19.7		
Dec. 1	23	16	21.37	3.13	5 55 48.3	29.8			.473619	1257			6 33.2	19.6		
6	23	16	24.50	6.35	5 55 18.5	50.3			.474876	1259			6 13.6	19.6		
11	23	16	30.85	9.53	5 54 28.2	70.4			.476135	1251			5 54.0	19.5		
16	23	16	40.38	12.69	5 53 17.8	90.1			.477386	1235			5 34.5	19.4		
21	23	16	53.07	15.76	5 51 47.7	109.4			.478621	1209			5 15.1	19.4		
26	23	17	8.83	18.79	5 49 58.3	128.3			.479830	1173			4 55.7	19.4		
31	23	17	27.62	21.64	5 47 50.0	146.1			.481003	1131			4 36.3	19.3		
36	23	17	49.26		S. 5 45 23.9	146.1			1.482134	1131			4 17.0	19.3		

